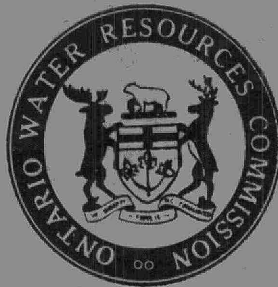


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C. W. R. C.
Ind. Waste
Survey

THE
ONTARIO WATER RESOURCES
COMMISSION
INDUSTRIAL WASTES SURVEY
of the
TOWN OF BRAMPTON

1968 - 1969



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1969
R231.

A REPORT
on
AN INDUSTRIAL WASTES SURVEY
of
THE TOWN OF BRAMPTON

1968 - 1969

Division of Industrial Wastes
ONTARIO WATER RESOURCES COMMISSION

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SECTION I

INTRODUCTION

The first survey of industries within the Town of Brampton was carried out by staff of the OWRC in 1957. Further surveys were carried out in 1961 and 1965 and in an effort to keep abreast of the changes in the Town, another survey was initiated in 1968 and completed in 1969.

The industries discharging wastes to the municipal sanitary sewer system are the responsibility of the Town and are required to comply with the terms and conditions of the municipal sewer-use by-law. The sewer-use by-law considered during this survey is the one which will be enacted by the Town as part of the agreement for the provision of Sewage Works for Peel County and the limits in this proposed by-law are assumed to be as in Table I.

It is the responsibility of the Ontario Water Resources Commission to control industrial waste discharges to storm sewers or watercourses and the criteria for the determination of acceptability of these flows are the OWRC water quality objectives (Table II).

TABLE I

Proposed Sewer-Use By-law Limits

| CONTAMINANT | LIMIT |
|---|-----------|
| 5-day Biochemical Oxygen Demand (BOD ₅) | 400 |
| Suspended Solids (SS) | 350 |
| Nickel | 10 |
| Chromium | 10 |
| Lead | 10 |
| Zinc | 10 |
| Cadmium | 8 |
| Copper | 8 |
| Cyanide | 5 |
| Phenols | 1 |
| Vegetable Oil | 100 |
| Mineral Oil | 15 |
| pH | 5.5 - 9.5 |

NOTE: All numbers in parts per million (ppm)
except pH

TABLE II
OWRC Water Quality Objectives

| CONTAMINANT | OBJECTIVE |
|------------------|-----------|
| BOD ₅ | 15 |
| Suspended Solids | 15 |
| Nickel | 1 |
| Chromium | 1 |
| Lead | 1 |
| Zinc | 5 |
| Cadmium | 1 |
| Copper | 1 |
| Cyanide | 0.1 |
| Phenols | 20 |
| Ether Solubles | 15 |
| pH | 5.5 - 9.5 |

NOTE: All numbers in ppm except phenols which are in parts per billion (ppb) and pH.

All industries with a water consumption of greater than 1,000 gallons per day were investigated and the information obtained on each is presented individually in Section II.

SUMMARY

A summary of the information obtained during the conduct of this survey is presented in Table III.

A waste discharge to the municipal sanitary system is considered satisfactory if it is in compliance with the terms of the proposed municipal sewer-use by-law and one to the storm sewer or watercourse is considered satisfactory if it meets the OMRC objectives for discharge to a watercourse.

The significant waste loadings to the sanitary sewage system are summarized in Table IV. These are given in pounds per day and do not include periodic batch discharges such as paint booth dumps and spent acid dumps.

TABLE III
INFORMATION SUMMARY

| COMPANY | WATER CONSUMPTION (gallons per day) | SANITARY SEWER DISCHARGE | WATERCOURSE DISCHARGE | REMARKS |
|---|---|---|---|---|
| American Can (Canada) Ltd. | 37,700 | wash water and domestic wastes | cooling water to Fletcher's Creek | satisfactory |
| American Hoist of Canada Ltd. | 18,600 | domestic wastes | cooling water to creek | satisfactory |
| American Motors (Canada) Limited | 290,000 | process wastes and domestic wastes | cooling water to storm sewer | storm sewer discharge un- satisfactory |
| Argo Plastics and Chemicals Ltd. | 8,200 | cooling water and domestic wastes | - | satisfactory |
| Benson and Hedges Canada Ltd. | 47,900 | washing and domestic wastes | cooling water to storm sewer | satisfactory |
| Brampton Chick Hatchery Limited | 2,490 | wash water and domestic wastes | - | satisfactory |
| Brampton Optical Company Limited | 12,000 | wash water and domestic wastes | - | satisfactory |
| Brampton Poultry Limited | 222,150 | process wastes, washings and domestic wastes | - | sanitary sewer dis- charge un- satisfactory |
| Butcher Engineer- ing Enterprises Ltd. | 18,300 | bonderizing line rinses and domes- tic wastes | cooling water to creek | watercourse and sanitary sewer dis- charge un- satisfactory |

| COMPANY | WATER CONSUMPTION (gallons per day) | SANITARY SEWER DISCHARGE | WATERCOURSE DISCHARGE | REMARKS |
|--|---|--|---|--|
| Calumet and Hecla (Canada) Limited | 15,750 | process wastes, cooling water and domestic wastes | - | sanitary sewer dis- charge un- satisfactory |
| Canada Ferro Company | 80,000 | process wastes and domestic wastes | cooling water to creek | satisfactory |
| Canadian Baker Perkins Limited | 2,900 | cooling water and domestic wastes | - | satisfactory |
| CIL Mastex Ind. Limited | 21,600 | cooling unit overflow and domestic wastes | cooling water to creek | watercourse discharge unsatisfac- tory |
| Charters Publish- ing Company Limited | 7,700 | domestic wastes | cooling water to storm sewer | satisfactory |
| Chub-Mosler and Taylor Safes Limited | 10,700 | paint booth water and domestic wastes | cooling water to ditch cement washings to land | satisfactory |
| Designed Precision Casting Limited | 4,180 | process wastes and domestic wastes | - | satisfactory |
| General Latex and Chemicals Ltd. | 6,820 | process wastes and domestic wastes | - | sanitary sewer dis- charge un- satisfactory |

| COMPANY | WATER CONSUMPTION (gallons/day) | SANITARY SEWER DISCHARGE | WATERCOURSE DISCHARGE | REMARKS |
|---|---------------------------------------|--|---|--|
| Gummed Papers Limited | 50,200 | process wastes and domestic wastes | cooling water to Fletcher's Creek | sanitary sewer dis- charge un- satisfactory |
| Iko Asphalt Roofing Company Limited | 115,400 | process wastes and domestic wastes | cooling water to ditch | watercourse and sanitary sewer dis- charges un- satisfactory |
| JIF Industries | 15,800 | cooling water and domestic wastes | - | satisfactory |
| Lustrow Steel Products Company | 7,000 | domestic wastes | cooling water to storm sewer | satisfactory |
| Morgan Adhesives | 1,500 | domestic wastes | - | satisfactory |
| Office Specialty Limited | 7,800 | plating wastes and domestic wastes | - | sanitary sewer dis- charge un- satisfactory |
| Pre-Con Murry Limited | 55,900 | domestic wastes | cooling and wash water to creek | watercourse discharge un- satisfactory |
| Regal Die Casting | 10,200 | cooling water and domestic wastes | - | satisfactory |

| COMPANY | WATER CONSUMPTION (gallons per day) | SANITARY SEWER DISCHARGE | WATERCOURSE DISCHARGE | REMARKS |
|---|---|--|---------------------------------|--|
| Rieke Metal Products | 99,500 | process wastes and domestic wastes | - | sanitary sewer discharge unsatisfactory |
| Sonco Tube Limited | 56,400 | domestic wastes | cooling water to storm sewer | watercourse discharge unsatisfac- tory |
| Strippit Tool and Machines | 4,600 | cooling water and domestic wastes | - | satisfactory |
| Union Screen Company of Canada Limited | 58,600 | process wastes and domestic wastes | boiler blow- down to ditch | watercourse and sanitary sewer dis- charges un- satisfactory |
| Wheaton Glass and Plastics Company of Canada Limited | 3,700 | cooling water and domestic wastes | - | satisfactory |

TABLE IV

WASTE LOADINGS TO SANITARY SYSTEM

| INDUSTRY | BIOCHEMICAL OXYGEN DEMAND (BOD ₅) lbs/day | SUSPENDED SOLIDS lbs/day | ZINC lbs/day | PHOSPHATE lbs/day | CHROMIUM lbs/day | ETHER SOLUBLES lbs/day | CYANIDE lbs/day |
|--|---|--------------------------------|-----------------|----------------------|---------------------|---------------------------|--------------------|
| American Motors (Canada) Limited | 98.5 | 86.9 | 6.9 | 41.5 | 1.8 | 28.2 | - |
| Benson and Hedges Canada Limited | 18.5 | 7.1 | - | - | - | - | - |
| Brampton Optical Limited | 18.7 | 29.4 | - | - | - | - | - |
| Butcher Engineering Enterprises Limited | - | 11.0 | 1.0 | 10.3 | - | - | - |
| Calumet and Hecla (Canadian) Limited | 4.4 | 6.3 | - | - | - | 4.2 | - |
| Canada Ferro Company | - | 31.5 | 2.7 | - | - | - | 0.05 |
| General Latex and Chemicals Limited | 0.5 | 5.0 | - | - | - | - | - |
| Gummed Papers Limited | 68 | 24.7 | - | - | - | 0.9 | - |
| Brampton Poultry Limited | 1,104 | 762 | - | - | - | - | - |
| Iko Asphalt Roofing Limited * | 25 | 92 | - | - | - | - | - |
| Office Specialty Limited (Copeland and Chaterson) | - | 1.2 | - | - | - | - | 0.4 |
| Rieke Metal Products | 25.2 | - | 8.0 | - | 0.1 | 2.5 | - |
| Union Screen Company of Canada | - | 3.5 | - | - | 13.5 | - | - |
| TOTAL | 1,362.8 | 1,060.6 | 18.6 | 51.8 | 15.4 | 35.8 | 0.45 |

* discharged once per week

SECTION II

AMERICAN CAN (CANADA) LIMITED

This plant, located at 228 Queen Street West, was surveyed on July 4, 1968.

SUMMARY

At the time of this survey, the quality of the wastes discharging to the storm sewers complied with OWRC water quality objectives. The plant wastes continuously discharging to the sanitary sewer complied with the proposed municipal by-law, but the cleaning solution, which is batch discharged to the sanitary sewer, had a suspended solids concentration in excess of the by-law limit. Due to the small volume of this discharge, it is unlikely to have any deleterious effect on the sewage treatment processes.

DETAILS OF SURVEY

| | |
|-----------------------|----------------------------------|
| Personnel Interviewed | - Mr. G. Camplin, Plant Engineer |
| Number of Employees | - 275 |
| Operating Schedule | - 24 hours per day |
| | - 5 days per week |

Description of Plant Process

This company is engaged in the production of wax-coated paper cups (brand name "Dixie Cup") and printed wax-coated cardboard boxes used for the packaging of frozen foods. The process consists of printing, cutting, folding and waxing operations.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an approximate rate of 37,700 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 5,500 |
| Cooling | <u>32,200</u> |
| Total | 37,700 |

Sources and Disposal of Wastes

There are three waxers denoted as the; "Glamakote waxer", the "Register waxer" and the "High Gloss waxer". Each waxer varies slightly in purpose and operation but in each, water is used to cool the cardboard after waxing. The "Register waxer" and the "High Gloss waxer" have a once through cooling system while the "Glamakote waxer" utilizes partial recirculation. Each of the overflow streams from the waxers discharges through its own interceptor to the storm sewer which in turn discharges to Fletcher's Creek.

Water is also used as a coolant for the compressors (high and low pressure), and a vacuum pump. These wastes discharge to the Queen Street storm sewer.

Periodic discharges of wastes arise from; the weekly washing of twenty glue pots, the dumping of an acidic alcohol solution used to keep printing plates clean, and the dumping of a cleaning solution (Basol 77) used to clean ink rollers.

The glue pot wash wastes discharge through a three-stage separator to the Queen Street sanitary sewer, along with the major portion of the domestic wastes. The remaining domestic wastes, the ink roller cleaning solution (200 gallons every 6 months) and the printing plate cleaning solution (25 gallons every week) are discharged via an overhead system to the Nelson Street sanitary sewer.

SAMPLING AND ANALYSIS

On July 4, 1968, grab samples were taken at the following locations;

- 1) Effluent from Register Waxer (1015 hours).
- 2) From tank of non-operating High Gloss Waxer (1000 hours).
- 3) Cooling water from low pressure compressor (1115 hours).
- 4) Cooling water from high pressure compressor (1130 hours).
- 5) Litho Plate cleaning solution (1130 hours).
- 6) Effluent from plant to Fletcher's Creek storm sewer (1500 hours).

These samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheets.

DISCUSSION OF FINDINGS

The concentrations of 5-day biochemical oxygen demand (BOD₅), suspended solids and ether soluble material in the plant effluent discharging to the Fletcher's Creek storm sewer were in compliance with the OWRC water quality objectives for discharge to a watercourse.

The only waste discharged from this plant to the sanitary sewer which does not comply with the proposed municipal by-law limits was the weekly discharge of the plate cleaning solution.

CONCLUSIONS AND RECOMMENDATIONS

At the time of inspection, the quality of all wastes discharged from this plant to the Fletcher's Creek storm sewer complied with the OWRC water quality objectives.

Considering the small volume of the plate cleaner discharged to the sanitary sewer, it is unlikely that this waste will have any deleterious effect on the sewage treatment processes.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| | | | | | | | | | |
|--|--|---------------------------|--|--|------------------|--|--|--|-----|
| Municipality: Brampton | | Report to: D. J. Harris * | | | c.c. Chem. Lab.* | | | | |
| Source: American Can Ltd. (Dixie Cup) | | | | | | | | | |
| Date Sampled: July 4/68. by: D. Harris | | | | | | | | | /ht |

| Lab. No. | 5-Day B.O.D. | Solids | | | Iso-Propyl Alcohol (in %) | Ether Solubles | pH at Lab. | Chloride as Cl. | Calcium as Ca. | | | |
|--|--------------|--------|-------|-------|---------------------------|----------------|------------|-----------------|----------------|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | |
| T 1570 | --- | 340 | 5 | 335 | --- | Trace* | --- | --- | --- | | | |
| T 1571 | --- | 370 | 5 | 365 | --- | 2 | --- | --- | --- | | | |
| T 1572 | 1.8 | --- | --- | 242 | --- | --- | --- | 31 | 50 | | | |
| T 1573 | 0.7 | --- | --- | 258 | --- | --- | --- | 30 | 50 | | | |
| T 1574 | ** | 2566 | 720 | 1846 | 15% ‡ | --- | 5.4 | --- | --- | | | |
| T 1575 | 1.0 | 314 | 6 | 308 | --- | Trace* | 7.7 | --- | --- | | | |
| <p>* Less than 2 ppm.</p> <p>** Test cannot be done due to high conc. of alcohol.</p> <p>‡ Test performed by gas chromatography.</p> | | | | | | | | | | | | |

| | | |
|--------|----|--|
| T 1570 | 1. | Effluent from Register Waxer (Grab 10:15 a.m.) |
| T 1571 | 2. | Grab from tank of non-operating High Gloss Waxer (Grab 11:00 a.m.) |
| T 1572 | 3. | Cooling water for low pressure Compressor (Grab 11:15 a.m.) |
| T 1573 | 4. | Cooling water for High pressure Compressor (Grab 11:15 a.m.) |
| T 1574 | 5. | Litho Plate Cleaning Solution (Grab - 11:30) |
| | 6 | Duplicate of (7) |
| T 1575 | 7. | Effluent from Plant to Storm Sewer at Rear - Grab (3:00 p.m.) |

AMERICAN HOIST OF CANADA LIMITED

This plant, located at 145 Heart Lake Road South, was surveyed on August 22, 1968.

DETAILS OF SURVEY

Personnel Interviewed - Mr. H. B. Howarth, Works Manager
Number of Employees - 30
Operating Schedule - 8 hours per day
- 5 days per week

Description of Plant Process

Hoist components such as cables, hooks, and chains are manufactured at this plant. The parts are formed by large presses, metal lathes and forges.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes at an approximate rate of 18,600 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 750 |
| Process | <u>17,850</u> |
| Total | 18,600 |

Sources and Disposal of Wastes

Cooling water from three large compressors is the only industrial waste at this plant. It is discharged to a sump outside the building from which, together with the roof and parking lot drainage, it flows to a creek located approximately 100 yards from the building.

SAMPLING AND ANALYSIS

A sample of the effluent discharging to the nearby creek was obtained on August 22, 1968, and submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition.

Analytical results are summarized on the appended industrial waste analysis sheet.

CONCLUSIONS AND RECOMMENDATIONS

Analysis of sample T-2581 indicates that, at the time of the survey, the cooling water discharged to the creek complied with OWRC water quality objectives for discharge to a watercourse.

No recommendations are made at this time.

**ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES**

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| Municipality: Brampton | | Report to: D.J. Harris * | | c.c. Chem. Lab.-* | | | | | | | | | |
|---|---|---------------------------------|-------|--------------------------|--------------------|-------------------|--|--|--|--|--|--|--|
| Source: American Hoist of Canada Limited | | | | | | | | | | | | | |
| Date Sampled: Aug. 22/68 by: DJH | | | | | | | | | | | | | |
| br | | | | | | | | | | | | | |
| Lab. No. | 5-Day B.O.D. | Solids | | | Phenols in ppb. | Ether Solubles | | | | | | | |
| | | Total | Susp. | Diss. | | | | | | | | | |
| T 2581 | | 220 | 6 | 214 | 0 | 0 | | | | | | | |
| OWRC Objec- tive | | | 15 | | 20 | 15 | | | | | | | |
| T 2581 | 1. Effluent from plant storm sewer to creek - Grab 11:00 a.m. | | | | | | | | | | | | |

AMERICAN MOTORS (CANADA) LIMITED

This plant, located at 220 Kennedy Road South, was surveyed on March 19, 1969.

SUMMARY

On March 19, 1969, the concentrations of suspended solids, phenol and biochemical oxygen demand (BOD₅) in the plant effluent discharging to the Steeles Avenue storm sewer did not comply with OWRC water quality objectives.

The plant effluent discharging to the sanitary sewer complied with the proposed municipal by-law limits in terms of BOD₅, suspended solids, chromium, zinc and pH.

It is recommended that the company investigate the source of the BOD₅, suspended solids and phenol concentrations in the storm effluent and take the necessary corrective measures to reduce them to acceptable levels.

DETAILS OF SURVEY

| | |
|-----------------------|--|
| Personnel Interviewed | - Mr. A. Trueman, Facilities Engineer |
| Number of Employees | - 1550 |
| Operating Schedule | - 2 x 8-1/2 production shifts per day, 5 days per week |
| | - 1 x 8-1/2 hour maintenance shift per day, 5 days per week |
| Production Volume | - 192 units per day |

DESCRIPTION OF PLANT PROCESS

Component parts of automobiles ("Rambler Line") are received and assembled at this plant. The various stages in production may be

summarized under the following headings.

Body Assembly

The body-chassis units are assembled and spot-welded in place from parts received at the plant. Minor cracks and imperfections are filled with plastic filler and the body is rough sanded before passage through the bonderizing line for rust protection.

Bonderizing Line

The units are conveyed through a closed tunnel where they are sprayed with the following solutions;

- 1) Alkali Cleaner.
- 2) Alkali Cleaner.
- 3) Running Rinse.
- 4) Zinc Phosphate.
- 5) Running Rinse.
- 6) Chromium Sealer.

After chromium sealer treatment, the units are sprayed with deionized water which runs back into the chromium holding tank and serves as make-up. The chromium tank overflow discharges to the sanitary sewer.

Painting

The bonderized body-chassis units are dipped to the roof line in an epoxy based primer, then sprayed with two coats of primer and passed through a baking oven. This finish is wet sanded, washed with town water and then with deionized water. Next, the units are spray painted,

three coats being applied, one wet coat immediately after the preceding one. This is possible due to the nature of the acrylic type paint.

Initial Leak Test

The painted units are tested for leaks by passage through a water shower (town water), followed by passage through a dye shower. With the aid of ultraviolet spot lamps, the ultraviolet sensitive dye is easily observed if present inside the body-chassis.

Upholstery Section

Upholstery fabrics are applied to seats and shrunk to size by use of steam from a 10 hp. steam generator.

Final Assembly

In the final assembly area, the bodies are undercoated and the 'power train', instrument panel and lights are installed. As the automobile comes off the assembly line, it is given a dynamic check for braking, alignment, engine performance, etc.

Any cars which were damaged on the assembly line are repaired at this point and spot painted in a refinishing spray booth. A smaller paint booth, also located in this area, is used for the painting of transmissions.

Final Leak Test

A small shower installation (town water) located at the end of the assembly line is used to leak test cars which failed the initial leak test and were repaired while on the assembly line.

Small Parts Area

Instrument panels, door posts and clutch pedals are bonderized and painted in this area. The bonderizing line consists of three sprays; caustic cleaner, water and ferric phosphate. After passage through the bonderizing line, the items are dried in a gas flame, sprayed with primer and painted.

Located in the same general area is a paint booth, in which the front end suspension parts are painted.

Engine Assembly

The engines are assembled in a separate plant. The basic manufactured units such as blocks, crankshafts, cylinder heads and pistons are received at this plant. Prior to assembly, these parts are cleaned in a two-stage unit. After assembly, the engines are painted in a small water-walled spray booth.

A dynamometer test unit located in this plant has a three-stage baffled separator to eliminate the possibility of gas or oil reaching the sanitary sewer.

WATER CONSUMPTION AND DISTRIBUTION

This company purchases water for domestic and industrial purposes from the Brampton PUC at an approximate rate of 290,000 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|------------------------------|-----------------------------|
| Domestic | 73,000 |
| Bonderizing Rinse | 61,000 |
| Cooling | 73,000 |
| Wet Sanding and Wash- ing | 22,000 |
| Maintenance Clean up | 61,000 |
| Total | <hr/> 290,000 |

SOURCES AND DISPOSAL OF WASTES

The layout of the sanitary and storm sewers in the main assembly plant is shown in Figure I. A brief description of the discharges to these sewers follows:

DISCHARGES TO SANITARY SEWER

The industrial wastes discharged to the Steeles Avenue sanitary sewer are summarized under the following headings.

Bonderizing Line

Wastes originating from this line are the running rinses and the periodic discharge of spent solutions. The approximate volume and

dumping schedule of the various spent solutions are given in Table II.

TABLE II

| TANK CONTENTS | VOLUME (gallons) | FREQUENCY OF DISCHARGE |
|----------------|---------------------|---|
| Alkali Cleaner | 10,000 | 1/6 weeks |
| Alkali Cleaner | 5,000 | 1/4 weeks |
| Running Rinse* | 5,000 | 1/2 days |
| Zinc Phosphate | 5,000 | not dumped, sludge draw off 1/night - land dumped |
| Running Rinse* | 5,000 | 1/2 days |
| Chrome Sealer | 5,000 | 1/2 days - dumped after treatment |

* the two running rinses are dumped on alternate days.

Before the chromic sealer is discharged, it is treated with sodium bisulphite and sodium carbonate to reduce and precipitate chromium as chromium hydroxide.

Paint Booths

The volume and dumping schedule of all water walled paint spray booths located throughout the plant are given in Table III.

TABLE III

| PAINT SPRAY BOOTH DESCRIPTION | VOLUME (gallons) | FREQUENCY OF DISCHARGE |
|----------------------------------|---------------------|---------------------------|
| second primer booth | 6,700 | 1/6 weeks |
| colour booth | 12,800 | 1/6 weeks |
| small parts booth | 4,500 | 1/6 weeks |
| transmission parts booth | 400 | 1/4 weeks |
| front end suspension booth | 400 | 1/4 weeks |
| refinishing booth | 4,000 | 1/8 weeks |
| engine booth | 1,000 | 1/6 weeks |

A surface active material is added to the water in the spray booths to prevent coagulation of the paint.

Small Parts Bonderizing Line

The cleaner, water rinse and ferric phosphate (600 gallons each) are discharged once every 6 weeks.

Two-Stage Washer

The two stages of this washer contain a detergent solution for the emulsification of oils. They have a volume of 1,000 gallons and 700 gallons respectively and are discharged once every 2 months.

Initial Leak Test

The town water rinse discharges directly to the sanitary sewer while the dye rinse is recycled and discharged once per week (300 gallons).

Wet Sanding

Both the town water and the deionized water rinses discharge directly to the sanitary sewer.

DISCHARGES TO STORM SEWER

The industrial wastes discharged to the Steeles Avenue storm sewer are summarized under the following headings.

Final Leak Test

The rinses (town water) used in the final leak test are discharged directly to the storm sewer.

Cooling Water

Cooling water for spot welders and the testing of engines is continuously recycled with a thermostatically controlled make-up. The overflow discharges to the storm sewer.

The cooling water for the dynamometer unit discharges directly to the storm sewer.

SAMPLING AND ANALYSIS

On November 15, 1968, grab samples were taken at the following locations;

- 1) Bonderizing system (#1 tank).
- 2) " " (#2 tank).
- 3) " " (#3 tank).
- 4) " " (#4 tank).
- 5) " " (#5 tank).
- 6) " " (#6 tank).
- 7) Second primer booth water.
- 8) Colour booth water.
- 9) Two-stage washer (Stage I).
- 10) Two-stage washer (Stage II).

On March 19, 1969, samples were composited at half-hour intervals between 1045 hours and 1400 hours at the following locations;

- 1) Storm sewer discharge.
- 2) Sanitary sewer discharge.

These samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. A summary of the results is appended to this report.

WASTE LOADINGS

The waste loading from this plant to the sanitary sewer, based on an estimated flow of 217,000 gallons per day, is summarized in Table IV.

TABLE IV

| BIOCHEMICAL OXYGEN DEMAND (BOD ₅) | | SUSPENDED SOLIDS | | ZINC | | PHOSPHATE | | ETHER SOLUBLES | |
|---|---------|---------------------|---------|------|---------|-----------|---------|-------------------|---------|
| PPM | LBS/DAY | PPM | LBS/DAY | PPM | LBS/DAY | PPM | LBS/DAY | PPM | LBS/DAY |
| 45 | 98.5 | 40 | 86.9 | 3.2 | 6.9 | 19 | 41.5 | 13 | 28.2 |
| 400* | | 350* | | 10* | | | | 100* | |

NOTE: ppm - parts per million

* - proposed municipal by-law limit

The waste loading listed in Table IV does not include the batch discharges of spent solutions. These solutions are discharged during the night shift.

The waste loading from this plant to the storm sewer based on an estimated flow of 73,000 gallons per day is summarized in Table V.

TABLE V

| BIOCHEMICAL OXYGEN DEMAND (BOD ₅) | | SUSPENDED SOLIDS | | ZINC | | PHOSPHATE | | ETHER SOLUBLES | | PHENOLS | |
|---|---------|---------------------|---------|------|---------|-----------|---------|-------------------|---------|---------|---------|
| PPM | LBS/DAY | PPM | LBS/DAY | PPM | LBS/DAY | PPM | LBS/DAY | PPM | LBS/DAY | PPM | LBS/DAY |
| 24 | 17.5 | 20 | 14.6 | 0.18 | 0.1 | 1.1 | 0.8 | 14 | 10.2 | 0.04 | 0.03 |
| 15* | | 15* | | 5.0* | | - | | 15* | | 0.02* | |

NOTE: ppm - parts per million

* - OWRC water quality objectives

DISCUSSION OF FINDINGS

The plant effluent discharging to the sanitary sewer complied with the proposed municipal by-law limits in terms of biochemical oxygen demand (BOD₅), suspended solids, zinc, chromium and ether soluble concentrations.

The analyses of spent solutions indicate that their discharge results in high loadings of BOD₅, suspended solids and phosphates to the sanitary sewer. All spent solutions are discharged at infrequent intervals during the night shift when the loading on the sewage treatment plant is at a minimum. The discharge of these materials should not be harmful to sewage plant operations.

Spent chromate sealer is partially treated by the addition of sodium bisulfite and sodium carbonate to reduce the hexavalent chromium to

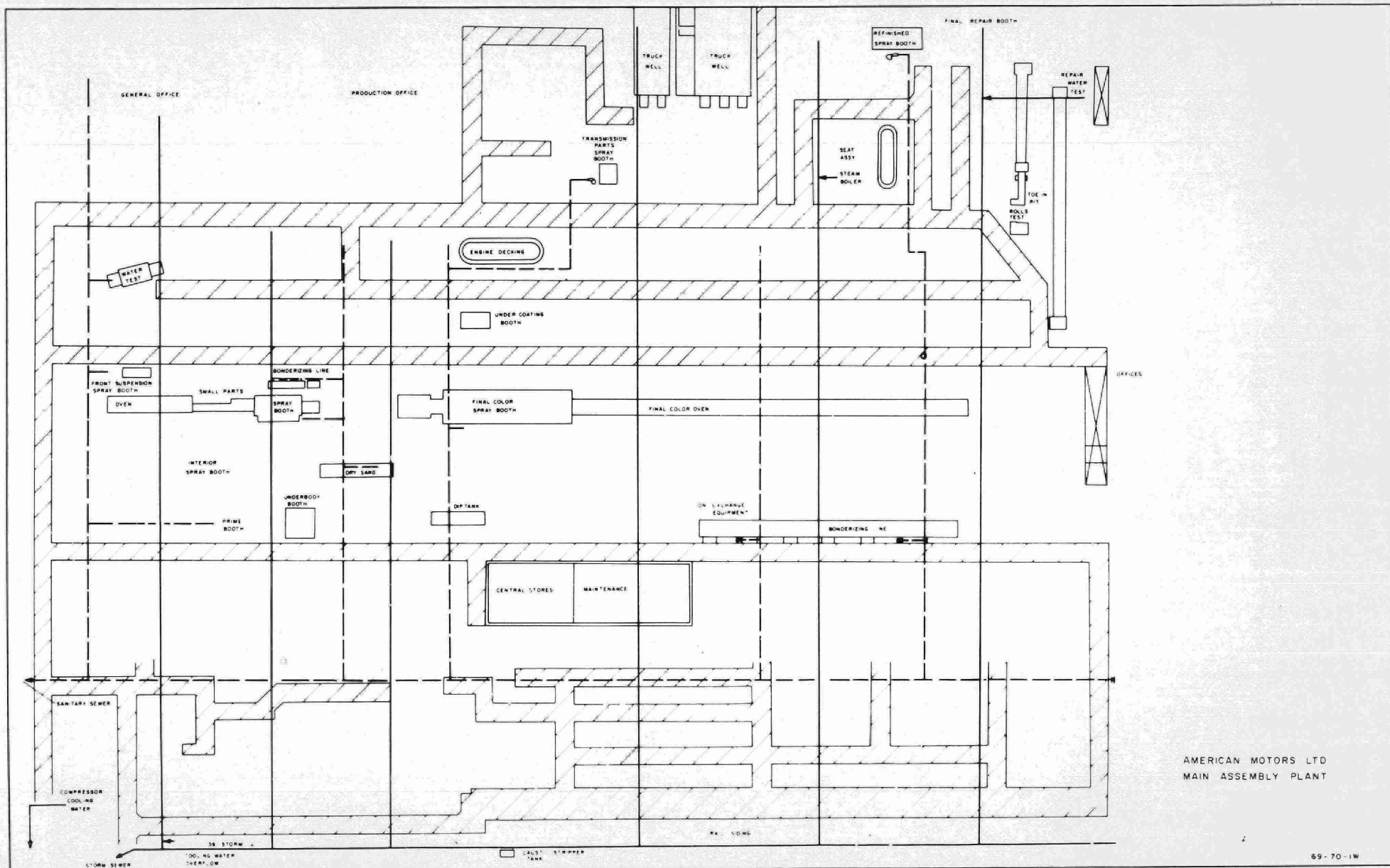
the less toxic trivalent state and precipitate it as the hydroxide. However, the treated solution is not filtered and, therefore, the loading of total chromium to the sewer is not lowered.

The concentrations of BOD₅, suspended solids, and phenols in the plant effluent discharging to the storm sewer are in excess of the OWRC water quality objectives and are unexplainable when the reported sources of waste discharged to the storm sewer are considered.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey the plant effluent discharging to the sanitary sewer complied with the proposed municipal by-law limits except for the periodic dumping of spent solutions. The discharge of these spent solutions is reported to have no adverse effect on the sewage treatment system. However, it is recommended that settling and/or filtering facilities be installed to remove the precipitated chromium hydroxide prior to discharge.

The plant effluent discharging to the storm sewer does not comply with the OWRC water quality objectives. It is recommended that the company investigate the source of the contaminants in the effluent to the storm sewer and take action to reduce them to acceptable levels.



AMERICAN MOTORS LTD
MAIN ASSEMBLY PLANT

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: D. Harris

c.c. Chem. Lab.

Source: American Motors

(rj)

Date Sampled: Nov. 15/68 by: L.Fitz and D. Harris

| Lab. No. | 5-Day B.O.D. | Solids | | | COD | pH at Lab. | Total Phosphate as PO ₄ | Total Chromium as Cr | Total Zinc as Zn | | | | |
|-------------|-----------------|--------|-------|-------|-------|---------------|--|----------------------------|------------------------|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T-3827 | 2300 | 13954 | 630 | 13324 | 10000 | 10.0 | 2900 | --- | --- | | | | |
| T-3828 | 180 | 1454 | 53 | 1401 | 2190 | 9.1 | 640 | --- | --- | | | | |
| T-3829 | 28 | 322 | 29 | 293 | 91 | 7.3 | 120 | --- | --- | | | | |
| T-3830 | 130 | 9574 | 150 | 9424 | 150 | 2.7 | 6300 | --- | 495. | | | | |
| T-3831 | 18 | 346 | 34 | 312 | 37 | 6.7 | 150 | --- | 10. | | | | |
| T-3832 | 80 | 402 | 28 | 374 | 110 | 6.8 | --- | 70.0 | --- | | | | |
| T-3833 | 520 | 2456 | 27 | 2429 | 1100 | 9.0 | --- | --- | --- | | | | |

| | | | |
|--------|---|---------------------------|------------------|
| T-3827 | 1 | bonderizer system | #1 tank |
| T-3828 | 2 | " " | #2 tank |
| T-3829 | 3 | " " | #3 tank |
| T-3830 | 4 | " " | #4 tank |
| T-3831 | 5 | " " | #5 tank |
| T-3832 | 6 | " " | #6 tank overflow |
| T-3833 | 7 | Second primer booth water | |

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| Municipality: Brampton | | Report to: D. Harris | | c.c. Chem. Lab. | | | | | | | | | |
|--|--------------|--|-------|-----------------|-----|------------|------------------------------------|-----------------------|------------------|------------------------------|----------------|-----|--|
| Source: AMERICAN MOTORS (CANADA) LIMITED | | | | | | | | | | | | | |
| Date Sampled: Nov. 15/68 Mar. 19/69 | | by: L. Fitz and D. Harris | | | | | | | | | | | |
| Lab. No. | 5-Day B.O.D. | Solids | | | COD | pH at Lab. | Total Phosphate as PO ₄ | Total Chromium as Cr. | Total Zinc as Zn | Gibbs Screened Phenol in ppb | Ether Solubles | | |
| | | Total | Susp. | Diss. | | | | | | | | | |
| T-3834 | 360 | 2822 | 248 | 2574 | --- | 9.0 | --- | --- | --- | --- | --- | --- | |
| T-3835 | 740 | 23506 | 784 | 22722 | --- | 8.7 | 8100 | --- | --- | --- | --- | --- | |
| T-3836 | 780 | 23836 | 1690 | 22146 | --- | 8.7 | 8400 | --- | --- | --- | --- | --- | |
| T-3837 | 31 | 294* | 56* | 238* | --- | 8.7 | --- | --- | --- | --- | --- | --- | |
| T-3838 | 24 | 320 | 20 | 300 | 148 | 8.1 | 1.1 | 0.05 | 0.18 | 40 | 14 | --- | |
| T-3839 | 45 | 330 | 40 | 290 | 176 | 7.4 | 19. | 0.84 | 3.2 | --- | 13 | --- | |
| OWRC | | | | | | | | | | | | | |
| Objec- | 15 | | 15 | | | 5.5 - 9.5 | | 1.0 | 5.0 | 20 | 15 | --- | |
| tives for | | | | | | | | | | | | | |
| storm sewers | | | | | | | | | | | | | |
| BY-LAW | | | | | | | | | | | | | |
| Objec- | 400 | | 350 | | | 5.5 - 9.5 | | 10.0 | 10.0 | 1000 | 100 | --- | |
| tives for | | | | | | | | | | | | | |
| sanitary | | | | | | | | | | | | | |
| sewers | | | | | | | | | | | | | |
| * Difficult obtaining a representative Sample | | | | | | | | | | | | | |
| T-3834 | 8 | Colour booth water | | | | | | | | | | | |
| T-3835 | 9 | Engine plant cleaner Stage 1 | | | | | | | | | | | |
| T-3836 | 10 | " " " " 2 | | | | | | | | | | | |
| T-3837 | 11 | Paint booth - engine plant | | | | | | | | | | | |
| T-3838 | 12 | Effluent to Storm sewer from Assembly Plant | | | | | | | | | | | |
| T-3839 | 13 | Effluent to Sanitary sewer from Assembly Plant | | | | | | | | | | | |

ARGO PLASTICS AND CHEMICALS LIMITED

This plant, located at 67 Kennedy Road South, was surveyed in June, 1968.

DETAILS OF SURVEY

Personnel Interviewed - Mr. H. G. Olster, Manager
Number of Employees - 25
Operating Schedule - 24 hours per day
- 5-1/2 days per week

Description of Plant and Process

Argo Plastics are secondary manufacturers of polyethylene, polypropylene, polystyrene and A.B.S. (acrylonitrile butadiene styrene). The basic resins are received and chemicals such as stabilizers and antioxidants are blended with them. The resulting compound is extruded and pelletized for distribution to manufacturers of custom blended plastics.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an approximate rate of 8,200 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 500 |
| Cooling | <u>7,700</u> |
| Total | 8,200 |

Sources and Disposal of Wastes

The majority of the water utilized in this plant is for the cooling of extruders. Water is recirculated through a cooling tower at an approximate rate of 800 gallons per minute with a bleed-off discharging to the Kennedy Road sanitary sewer.

SAMPLING AND ANALYSIS

On June 28, 1968, a grab sample was taken of the cooling water discharging to the sanitary sewer. This sample was submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheet.

CONCLUSIONS AND RECOMMENDATIONS

The only industrial use of water at this plant is for the cooling of extruders. The quality of the waste discharging to the sanitary sewer not only complied with the proposed municipal by-law limits but was well within the OWRC objectives for discharge to a watercourse.

It is therefore recommended that consideration be given to directing the cooling water to a storm sewer or watercourse.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: J. Monteith *

c.c. Chem. Lab.*

Source: Argo Plastics & Chemicals Ltd.

Date Sampled: July 28/68 by: J.M.

/ht

| Lab. No. | 5-Day B.O.D. | Solids | | | Phenols in ppb | COD | Ether Solubles | pH at Lab. | | | | | |
|-------------------|-------------------------------------|--------|-------|-------|-------------------|-----|--------------------|---------------|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T 1541 | | 262 | 2 | 260 | 0 | 4 | Trace * | 8.5 | | | | | |
| OWRC Objective | | | 15 | | 20 | | 15 | 5.5 - 9.5 | | | | | |
| | | | | | | | * Less than 2 ppm. | | | | | | |
| T 1541 | Cooling Water Sump - Grab 2:35 p.m. | | | | | | | | | | | | |

BENSON AND HEDGES CANADA LIMITED

This plant, located at 174 Kennedy Road South, was surveyed on June 26, 1968.

SUMMARY

On the date of this survey, the concentration of Biochemical Oxygen Demand (BOD₅) and suspended solids in the cylinder washings discharged to the Kennedy Road sanitary sewer did not comply with the proposed municipal by-law limits. However, considering the small volume of washings, there will probably be no adverse effect on the municipal sanitary sewerage system.

The plant effluent discharging to the storm sewer complied with OWRC water quality objectives.

DETAILS OF SURVEY

| | | |
|-----------------------|---|-------------------------------|
| Personnel Interviewed | - | Mr. J. Cooper, Chief Engineer |
| Number of Employees | - | 250 |
| Operating Schedule | - | 15 hours per day |
| | - | 5 days per week |

Description of Plant Process

Tobacco is received at the plant as pressed cylindrical bales. These bales are conditioned (moistened) by exhausting steam through a pipe placed in the centre of the bale. After blending and flavouring, the tobacco is again conditioned, this time by rotation in a steam filled flavouring cylinder. This treated tobacco is conveyed to cigarette rolling machines where the cigarette is formed and packaged.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 335,000 gallons per week. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per week) |
|---|------------------------------|
| Cooling water (Untreated) | 225,000 |
| Plant Uses (Treated with ion exchange resins) | 100,000 |
| Boiler make-up (Phos- phate treated) | 10,000 |
| Total | <hr/> 335,000 |

Sources and Disposal of Wastes

The largest use of water in this plant is for cooling purposes. Cooling water from two freon condensers is recirculated through two cooling towers. The cooling water for five compressors and three vacuum pumps is sewered (storm sewer) with no recirculation.

The water used for domestic and other plant purposes is treated in one of two anion-cation resin water softeners. These water softeners are backwashed twice per week (600 gallons per cycle).

The backwash is discharged to the sanitary sewer.

Water for boiler make-up is phosphate treated and the blowdown is discharged to a field at the rear of the plant.

Other than cooling water and sanitary wastes, the plant discharges wash water from; the flavouring preparation kettles, the glue pots (used in cigarette rolling operations) and the flavouring cylinders. These cylinders are washed daily. The time of each washing varies with production volume. The wash water for all five cylinders, approximately 500 gallons per day, is discharged to the sanitary sewer.

The wash water from the glue pots (which flows through a grease separator) and flavouring preparation kettles are insignificant due to their small volume.

SAMPLING AND ANALYSIS

On June 26, 1968, grab samples were taken of the following waste streams;

1. Wash water from the cylinders (100 hours).
2. Grab from manhole in parking lot storm sewer (1430 hours).

These samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheets.

WASTE LOADINGS

The waste loadings to the sanitary sewer from the cylinder washings are summarized in Table II.

TABLE II

| VOLUME (gallons) | BIOCHEMICAL OXYGEN DEMAND (BOD ₅) | | SUSPENDED SOLIDS | |
|---------------------|--|---------|---------------------|---------|
| | ppm | lbs/day | ppm | lbs/day |
| 500 | 3,700 | 18.5 | 1,417 | 7.1 |
| | 400* | | 350* | |

NOTE: ppm - parts per million

* - proposed municipal by-law limits

DISCUSSION OF FINDINGS

The concentrations of BOD₅ (3,700 ppm) and suspended solids (1,417 ppm) in the cylinder washings discharged to the sanitary sewer exceed the proposed municipal by-law limits of 400 ppm and 350 ppm respectively, however, the loadings contributed by these washings should have no significant effect on the operation of the sewage treatment plant.

The plant effluent discharging to the storm sewer complied with OWRC water quality objectives in terms of BOD₅ and ether soluble concentrations.

CONCLUSIONS AND RECOMMENDATIONS

On the date of this survey, the plant effluent discharging to the storm sewer complied with OWRC water quality objectives.

The plant effluent discharged to the sanitary sewer should have no adverse effect on the operation of the municipal sewerage treatment system and should be acceptable under the present conditions.

No recommendations are made at this time.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: D.J. Harris *

c.c. Chem. Lab. *

Source: Benson & Hedges

Date Sampled: Aug. 6/68 by: D.J. Harris

(rj)

| Lab. No. | 5-Day B.O.D. | Solids | | | pH at Lab. | Ether Solubles | NITROGEN AS N | | | | | | |
|-------------|-----------------|--------|-------|-------|---------------|-------------------|-------------------|-----------------|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | Total Kjeldahl | Free Ammonia | | | | | |
| T-2367 | 3.2 | --- | --- | --- | 7.3 | 0 | 1.2 | 0.65 | | | | | |

| | | | | | | | | | | | | | |
|--------|---|--|--|--|--|--|--|--|--|--|--|--|--|
| T-2367 | 1 | Effluent to Storm Sewer - Parking Lot Manhole (Grab 2.30 PM) | | | | | | | | | | | |
|--------|---|--|--|--|--|--|--|--|--|--|--|--|--|

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: D.J. Harris *

c.c. Chem. Lab. *

Source: Benson & Hedges
(Canada Ltd.)

Date Sampled: Aug. 21/68 by: D.J. Harris

| Lab. No. | 5-Day B.O.D. | Solids | | | NITROGEN AS N | | COD | pH at Lab. | | | | | |
|---|-----------------|--------|-------|-------|-------------------|-----------------|------|---------------|--|--|--|--|--|
| | | Total | Susp. | Diss. | Total Kjeldahl | Free Ammonia | | | | | | | |
| T-2385 | 3700 | 3420 | 1417 | 2003 | 320 | 120. | 5800 | 5.6 | | | | | |
| By-Law Objectives for sani- tary sewer | 400 | | 350 | | | | | 5.5 - 9.5 | | | | | |
| OWRC Objectives for storm sewer | 15 | | 20 | | | | | 5.5 - 9.5 | | | | | |

T-2385 1 Wash water from Flavour cylinders (Grab 10.00 AM)

BRAMPTON CHICK HATCHERY LIMITED

This plant, located at 63 Eastern Avenue, was surveyed on January 22, 1969.

DETAILS OF SURVEY

Personnel Interviewed - Mr. R. Jones, Plant Manager
Number of Employees - 3
Operating Schedule - 8 hours per day
- 7 days per week

Description of Plant Process

Chicks are hatched in incubators, placed in boxes and shipped to poultry farms.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 2,500 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 75 |
| Washing | 2,415 |
| Total | <hr/> 2,490 |

Sources and Disposal of Wastes

The only process waste emanating from this plant is wash water which is periodically discharged to the Eastern Avenue sanitary sewer. Two nights per week the incubator trays and crates are washed and disinfected with chlorine. The egg shells are placed in barrels for land disposal.

SAMPLING AND ANALYSIS

Due to the time of wash-up, samples were not obtained.

CONCLUSIONS AND RECOMMENDATIONS

Wastes discharged from this plant should not adversely effect the municipal sewerage system.

No recommendations are made at this time.

BRAMPTON OPTICAL COMPANY LIMITED

This plant, located at 11 George Street North, was inspected on June 26, 1968.

DETAILS OF SURVEY

| | | |
|-----------------------|---|---|
| Personnel Interviewed | - | Mr. G. Swackhumer, Plant Superintendent |
| Number of Employees | - | 70 |
| Operating Schedule | - | 8-1/4 hours per day |
| | - | 5 days per week |

Description of Plant Process

This company is engaged in the manufacturing of optical lenses, for prescription grinding by opticians. The main operations may be summarized as follows:

- 1) Cutting - the rough lense components are cut to shape from optical glass (oil is used as a lubricant - solids are settled and oil is reused).
- 2) These components are then blocked in pitch to secure them for the following two operations.
 - (a) Fining - a garnet abrasive is used to grind the components to a desired curvature.
 - (b) Polishing - an aqueous cerium oxide suspension is used to polish the lens components.
- 3) The various lens components are fused and cut to mounting size to form the final rough lens.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 12,000 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 1,500 |
| Process | 10,500 |
| Total | 12,000 |

Sources and Disposal of Wastes

The wastes in this process originate from the fining and polishing operations. These operations are similar in procedure but differ in the coarseness of the agent used. The lens components, blocked in pitch, are placed in rotating bowls containing the grinding (garnet) or polishing agent (cerium oxide). When removed, they are rinsed in open troughs located below the bowls. These troughs have a continuous overflow discharging to the sanitary sewer.

At the end of each day, the bowls are also washed into these troughs which are then unplugged, allowing the wash water to discharge through a series of three sumps to the sanitary sewer.

SAMPLING AND ANALYSIS

On June 26, 1969, the following samples were obtained:

- 1) Grab from final sump during normal operations (1020 hours).
- 2) Grab from final sump during wash-up (1600 hours).

The samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheet.

WASTE LOADINGS

The waste loading to the sanitary sewer from this plant is summarized in Table II.

TABLE II

| VOLUME (gallons) | BIOCHEMICAL OXYGEN DEMAND (BOD ₅) | | SUSPENDED SOLIDS CONCENTRATION | |
|---------------------|--|---------|-----------------------------------|---------|
| | ppm ⁽¹⁾ | lbs/day | ppm | lbs/day |
| 1500 ⁽²⁾ | 16 | 0.3 | 38 | 0.6 |
| 9000 ⁽³⁾ | 205 | 18.4 | 320 | 28.8 |
| _____ | 400 ⁽⁴⁾ | _____ | 350 ⁽⁴⁾ | _____ |
| 10,500 | | 18.7 | | 29.4 |

- NOTE:
- (1) parts per million
 - (2) estimated overflow during processing period
 - (3) estimated flow during wash-up
 - (4) proposed municipal by-law limit

DISCUSSION OF FINDINGS

The quality of the waste discharging from this plant to the George Street sanitary sewer complied with proposed municipal by-law limits. At the time of this survey, the sumps were clean and appeared to be properly maintained.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey the wastes discharging from this plant to the sanitary sewer complied with proposed municipal by-law limits and should have no harmful effect on the operation of the sewerage system.

No recommendations are made at this time.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| Municipality: Brampton | | Report to: D. Harris * | | | | c.c. Chem. Lab * | | | | | | | |
|--------------------------------------|---|--------------------------------------|-------|-------|---------------|------------------|--|--|--|--|--|--|--|
| Source: Brampton Optical Ltd. | | | | | | | | | | | | | |
| Date Sampled: June 25/68 | | by: J. Monteith and D. Harris | | | | | | | | | | | |
| Lab. No. | 5-Day B.O.D. | Solids | | | pH at Lab. | | | | | | | | |
| | | Total | Susp. | Diss. | | | | | | | | | |
| T-1505 | 16 | 506 | 38 | 468 | 7.1 | | | | | | | | |
| T-1506 | 205 | 808 | 320 | 488 | 7.5 | | | | | | | | |
| T-1505 | 1. Plant effluent to San. Sewer (Polishing section) grab 10:20 June 25/68 (not washing) | | | | | | | | | | | | |
| T-1506 | 2. Plant effluent to San. Sewer (Polishing Section) grab 4:00 June 26/68 washing | | | | | | | | | | | | |

BRAMPTON POULTRY LIMITED

This plant, located at 32 Kennedy Road South, was surveyed on July 8, 1968.

SUMMARY

On July 8, 1968, the average BOD₅ concentration of the wastes discharging from this plant to the Brampton sanitary sewerage system was 505 parts per million (ppm) which exceeds the municipal by-law limit by 105 ppm or 223 pounds per day. Similarly, the average ether soluble concentration was 152 ppm which exceeds the municipal by-law limit by 52 ppm or 115 pounds per day.

In order to reduce the strength of wastes discharged from this plant, it is recommended that the company:

- 1) exercise better control over the maintenance and operation of screening facilities.
- 2) instruct plant personnel in the use of proper procedures to reduce the amount of wastes being discharged to the sewers as a result of operating carelessness.

DETAILS OF SURVEY

| | | |
|-----------------------|---|----------------------------------|
| Personnel Interviewed | - | Mr. D. Dale, Manager |
| | - | Mr. B. Ballantyne, Plant Foreman |
| Number of Employees | - | 104 |
| Working Schedule | - | 8 hours per day |
| | - | 4 days per week |

Description of Plant and Process

Since 1965, production at this plant has increased from 24,000 to slightly more than 30,000 birds per day (maximum of 3,900 birds per hour). Plant operations are discussed in terms of the major process areas.

Receiving and Killing

The crated birds are transported by truck to the plant. On entering the receiving area, the birds are removed from the crates and hung by their feet on an overhead conveyor. The empty crates are passed through an automatic washer and disinfected with formaldehyde. The conveyor transports the birds into the killing area where they are electrically stunned and killed. They are then passed through a "bleeding tunnel" and into the defeathering room.

Defeathering and Eviscerating

On entering the defeathering room, the birds are passed through a scalding tank, and then through a series of three defeathering machines. Before the final defeathering machine, the birds are singed to remove pin feathers.

The birds are then placed on another conveyor and passed into the eviscerating area where the viscera are removed. A trough running underneath the length of the conveyor receives the unwanted viscera and heads. Viscera such as the liver and gizzard are separated and conveyed via a separate trough to a washing and chilling area for processing and

inclusion with the bird during packing. Other organs in the abdominal cavity are removed by vacuum and stored in a tank located in the killing room. The feet are cut from the birds and the birds dropped into a large washing tank. They are removed from the wash by conveyor and carried into the packing room for chilling, cutting and packing.

Water Consumption and Distribution

This plant purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 222,150 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|--------------------------------|-----------------------------|
| Domestic | 2,000 |
| Ice Making (24,000 lbs/day) | 5,000 |
| New Sump - Process | 141,425 |
| Old Sump - Process | 71,725 |
| Total | <hr/> 220,150 |

Sources and Disposal of Wastes

Receiving and Killing Area

The only continuous source of waste from the receiving room is the overflow from the crate washer. At the end of the day, the solids

(consisting mostly of manure and feathers) are swept up and shovelled into barrels, along with the solids from the crate washer, for land disposal. The crate washer is dumped during each wash-up period.

The blood from the "bleeding tunnel" is collected in barrels. At the end of the day, the coagulated blood is shovelled and hosed from the tunnel. This blood is also collected in barrels.

Defeathering and Eviscerating Sections

During the day, the overflow from the scalding tank and blood drippings from birds on the conveyor system flow into the floor drains. At the end of the day, the scalding tank is dumped (2,900 gallons). The feathers are carried from the defeathering room into the killing area on a rubber fingered conveyor. The blood, feathers and unwanted organs are stored in the killing area and sold to a rendering plant.

The two troughs which receive the unwanted viscera and the heads empty into floor channels which combine into a single channel and discharge into a sump with a coarse fixed screen and a step esculator-type mechanical screen. Here the solids are removed either for sale to the rendering plant or for pet food. The effluent from the coarse fixed screen discharges into a second sump. The wastes in this sump discharge to the sanitary sewer via an L-shaped downward extended pipe. For purposes of identification, this sump will be referred to as the new sump.

The washing tank which has a constant overflow discharging to the floor drains is dumped (2,640 gallons) at the end of each day. The chiller tank is also dumped at the end of each day (3,380 gallons).

The old and new sumps discharge to the old and new manholes respectively. The distribution of flows is divided as follows: (Figure I).

| <u>Old Manhole</u> | <u>New Manhole</u> |
|---|--|
| receiving dock floor drains, defeathering area floor drains, and eviscerating area floor drains. | crate washer floor drains, killing area floor drains, eviscerating area troughs, cooling room floor drains, and packing area floor drains. |

SAMPLING PROGRAMME

On July 8, 1968, the following composite samples were taken every half-hour during the chicken kill, between the hours of 0900 hours to 1130 hours and 1300 hours to 1600 hours.

- 1) Old sump.
- 2) New sump prior to screen.
- 3) Old manhole in yard.
- 4) New manhole at road.

Composite samples were also taken at the new and old manhole during the turkey kill (1600 hours to 1715 hours), and during wash-up (1730 hours to 1900 hours).

The following grab samples were taken throughout the day:

1. Overflow from crate washer (1430 hours)
2. Overflow from scalding tank (1425 hours)
3. Overflow from final washer (1440 hours)
4. Grab from chiller tank (1455 hours)
5. Grab from old manhole during receiving room wash-up (1945 hours)

ANALYTICAL RESULTS

Analytical results are summarized on the appended industrial wastes analysis sheets.

WASTE LOADINGS

Table I and II summarizes BOD₅ and suspended solids waste loadings (in pounds per day) discharged to the new and old manholes. The actual and allowed (proposed by-law limits) total waste loadings are given in Table III for July 8, 1968. Table IV gives the average waste loadings (lbs/hr.) for a chicken and turkey kill as well as the total waste loadings to be expected for a wash-up period.

TABLE I
OLD MANHOLE

| TIME | BOD ₅ | | SUSPENDED SOLIDS | | ETHER SOLUBLES | |
|------------------------------------|------------------|---------|------------------|---------|----------------|---------|
| | ppm | lbs/day | ppm | lbs/day | ppm | lbs/day |
| 1. * Chicken Kill (0700 - 1600) | 595 | 252 | 409 | 173 | 249 | 105 |
| 2. * Turkey Kill (1600 - 1715) | 660 | 39 | 342 | 20 | 100 | 6 |
| 3. + Wash-up (1715 - 2100) | 780 | 199 | 808 | 206 | 136 | 35 |
| Total | | 490 | | 399 | | 146 |

* - calculated on an hourly flow of 4,700 gallons

+ - calculated on a total flow of 25,550 gallons

NOTE: it was assumed that waste flow was constant
during the lunch hour.

TABLE II
NEW MANHOLE

| TIME | BOD ₅ | | SUSPENDED SOLIDS | | ETHER SOLUBLES | |
|------------------------------------|------------------|---------|------------------|---------|----------------|---------|
| | ppm | lbs/day | ppm | lbs/day | ppm | lbs/day |
| 1. * Chicken Kill (0700 - 1600) | 370 | 310 | 240 | 201 | 170 | 142 |
| 2. * Turkey Kill (1600 - 1715) | 280 | 33 | 168 | 19 | 87 | 10 |
| 3. + Wash-up (1715 - 2100) | 530 | 271 | 280 | 143 | 72 | 37 |
| Total | | 614 | | 363 | | 189 |

* - calculated on an hourly flow of 9,300 gallons

+ - calculated on a total flow of 51,100 gallons

NOTE: it was assumed that waste flow was constant during the
lunch hour

TABLE III

TOTAL DISCHARGE FOR DAY

| | BOD ₅ | SUSPENDED SOLIDS | ETHER SOLUBLES |
|--|------------------|------------------|----------------|
| | (lbs/day) | (lbs/day) | (lbs/day) |
| Actual Discharge | 1104 | 762 | 335 |
| Allowed Discharge | 881 | 771 | 220 |
| Loading in excess of proposed by-law limit | 223 | - | 115 |

TABLE IV

AVERAGE WASTE LOADINGS

| | BOD ₅ | | | SUSPENDED SOLIDS | | | ETHER SOLUBLES | | |
|-----------------------|------------------|---------|------|------------------|---------|------|----------------|---------|------|
| | Actual | Allowed | Over | Actual | Allowed | Over | Actual | Allowed | Over |
| Chicken Kill (lbs/hr) | 62 | 56 | 6 | 42 | 49 | - | 27 | 14 | 13 |
| Turkey Kill (lbs/hr) | 58 | 56 | 2 | 31 | 49 | - | 13 | 14 | - |
| Wash-up (lbs) | 470 | 307 | 163 | 349 | 268 | 81 | 72 | 77 | - |

DISCUSSION OF FINDINGS

The BOD₅ and suspended solids waste loadings at this plant are in excess of those considered normal by the U.S. Department of Health. For a flow-away poultry processing plant utilizing proper screening and blood recovery techniques, normal waste loadings are considered to be 13 pounds and 25 pounds per 1,000 birds for suspended solids and BOD₅ respectively.¹ The results of this survey indicate that this plant discharges a waste loading of 25 pounds and 36 pounds of suspended solids and BOD₅ respectively per 1,000 birds. It would therefore be expected that the waste loadings from this plant could be reduced by utilizing better screening techniques and improving in-plant control.

For example, in the killing room, where waste viscera are ground into dog food, carelessness in packaging, results in some of the dog food being spilled on the floor and inevitably being washed down the drain during wash-up. This and other areas exist in the plant where carelessness contributes unnecessarily high waste loadings on the sewerage system.

It is also extremely important that all floor drains and sump screens be kept in place and properly maintained. During this survey, no screen was present in the old sump which is designed for a vertical screen. This lack of in-plant maintenance and control contributes to the high waste loadings and probably accounts for past instances of

¹ "Wastes from the Poultry Processing Industry" -
The Robert A. Taft Sanitary Engineering Centre,
Cincinnati, Ohio-Technical Report W 62-63, 1962.

chicken heads and feathers entering the sewerage system and disrupting operations at the Brampton sewage treatment plant.

CONCLUSIONS AND RECOMMENDATIONS

On July 8, 1968, 1104 pounds of BOD₅, 762 pounds of suspended solids and 335 pounds of ether soluble material were discharged from this plant to the Brampton municipal sanitary sewerage system. These daily waste loadings are in excess of municipal by-law limits by 223 pounds of BOD₅ and 115 pounds of ether soluble material per day.

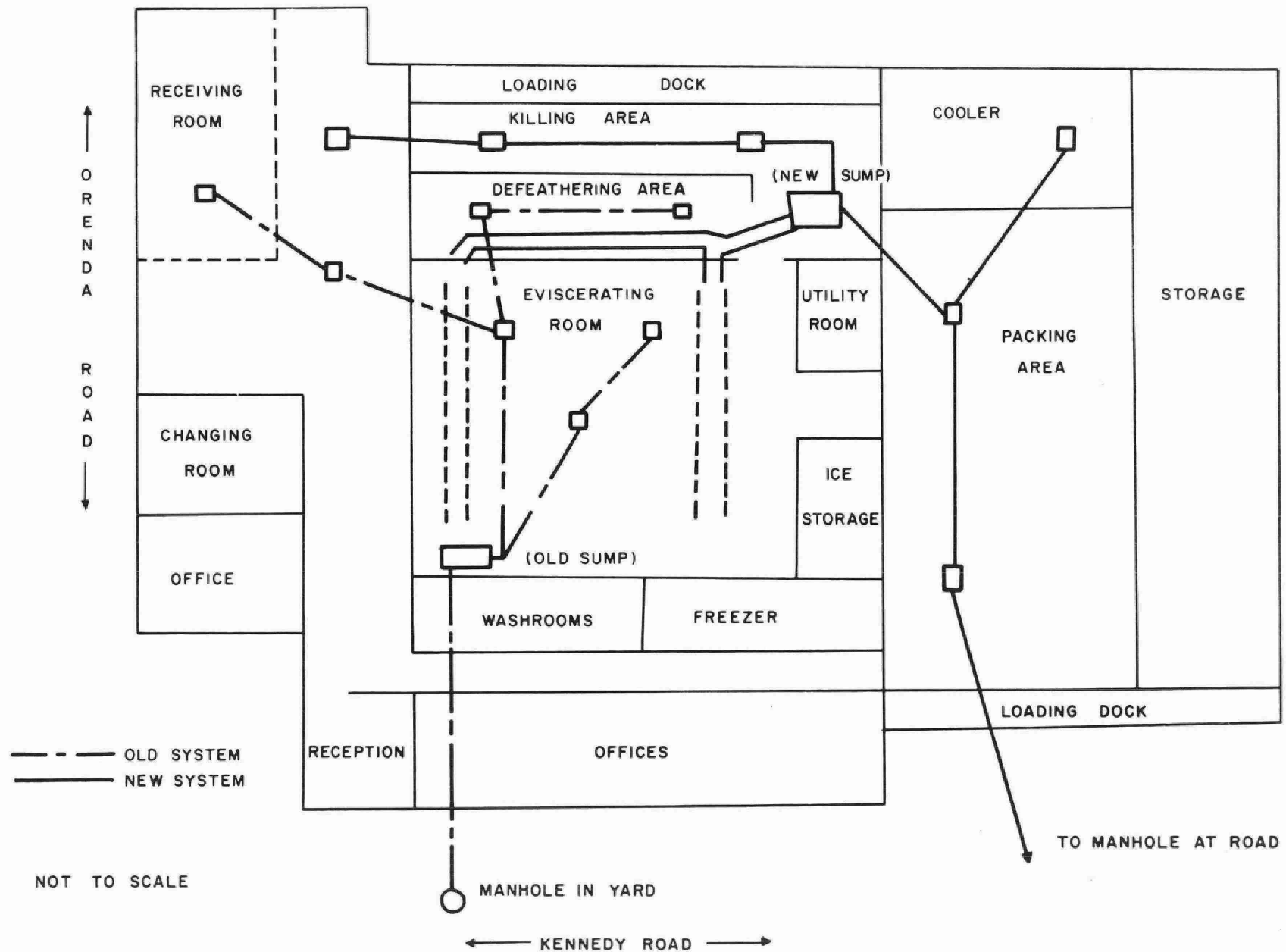
It should be noted that the BOD₅ waste loading has been decreased to approximately 25% of the value reported in the 1965 report as a result of better screening techniques and the installation of a blood recovery system.

It is recommended that the company exercise better control over the maintenance and operation of the screening facilities.

It is also recommended that plant personnel be instructed in the use of proper procedures to reduce the amount of wastes being washed into the sewers through operating carelessness.

FLOOR PLAN OF BRAMPTON POULTRY

FIG. 1



ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| | | | | | | | | | | | |
|---------------------------------|--|-------------------------------|--|--|--|--------------------------|--|--|--|--|--|
| Municipality: Brampton | | Report to: D. Harris * | | | | c.c. Chem. Lab.-* | | | | | |
| Source: Brampton Poultry | | | | | | | | | | | |
| Date Sampled: July 8/68 | | by: D.H./L. Fitz | | | | br | | | | | |

| Lab. No. | 5-Day B.O.D. | Solids | | | Ether Solubles | | | | | | | | |
|----------|--------------|--------|-------|-------|----------------|--|--|--|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T 1680 | 840 | 1194 | 482 | 712 | 178 | | | | | | | | |
| T 1681 | 510 | 1720 | 1414 | 306 | 701 | | | | | | | | |
| T 1682 | 370 | 590 | 226 | 364 | 127 | | | | | | | | |
| T 1683 | 600 | 1094 | 446 | 648 | 224 | | | | | | | | |
| T 1684 | 860 | 1190 | 578 | 612 | 278 | | | | | | | | |
| T 1685 | 480 | 954 | 616 | 338 | 2323 | | | | | | | | |
| T 1686 | 590 | 942 | 372 | 570 | 273 | | | | | | | | |
| T 1687 | 370 | 642 | 254 | 388 | 212 | | | | | | | | |

| | | | | |
|--------|----|--------------------------|---|----------------------------------|
| T 1680 | 1. | Old Sump |) | Composite 1:00 p.m. - 4:00 p.m. |
| T 1681 | 2. | New Sump prior to screen |) | |
| T 1682 | 3. | New manhole at road |) | |
| T 1683 | 4. | Old manhole in yard |) | |
| T 1684 | 5. | Old Sump |) | Composite 9:00 a.m. - 11:30 a.m. |
| T 1685 | 6. | New Sump prior to screen |) | |
| T 1686 | 7. | Old manhole in yard |) | |
| T 1687 | 8. | New manhole at road |) | |

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| Municipality: | | Report to: | | | | C.C. | | | | | |
|--|-----------------|--|-------|-------|-------------------|---------------------------------|--|--|--|--|--|
| Source: | | | | | | | | | | | |
| Date Sampled: July 8/68 by: D.H. br | | | | | | | | | | | |
| Lab. No. | 5-Day B.O.D. | Solids | | | Ether Solubles | | | | | | |
| | | Total | Susp. | Diss. | | | | | | | |
| T 1688 | 660 | 1012 | 342 | 670 | 100 | | | | | | |
| T 1689 | 280 | 554 | 168 | 386 | 87 | | | | | | |
| T 1690 | 780 | 1642 | 808 | 834 | 136 | | | | | | |
| T 1691 | 530 | 1148 | 280 | 868 | 72 | | | | | | |
| T 1692 | 260 | 1006 | 598 | 408 | 38 | | | | | | |
| T 1693 | 1950 | 3636 | 1206 | 2430 | 188 | | | | | | |
| T 1694 | 660 | 1098 | 424 | 674 | 244 | | | | | | |
| T 1695 | 920 | 1614 | 384 | 1230 | 174 | | | | | | |
| T 1696 | 490 | 2356 | 1432 | 924 | 69 | | | | | | |
| T 1688 | 9. | Old manhole in yard) | | | | Composite 4:00 p.m. - 5:15 p.m. | | | | | |
| T 1689 | 10. | New manhole at road) | | | | | | | | | |
| T 1690 | 11. | Old manhole in yard at washup | | | | Composite 5:30 p.m. - 6:45 p.m. | | | | | |
| T 1691 | 12. | New manhole at road during washup | | | | Composite 5:30 p.m. - 7:00 p.m. | | | | | |
| T 1692 | 13. | Overflow from Crate washer | | | | Grab 2:30 p.m. | | | | | |
| T 1693 | 14. | Overflow from Scolding tank | | | | Grab 2:25 p.m. | | | | | |
| T 1694 | 15. | Overflow from Final washer | | | | Grab 2:40 p.m. | | | | | |
| T 1695 | 16. | Grab from Chiller tank | | | | Grab 2:55 p.m. | | | | | |
| T 1696 | 17. | Grab from old manhole in yard during receiving room washup | | | | - 7:45 p.m. | | | | | |

BUTCHER ENGINEERING ENTERPRISES LIMITED

This plant, located at 45 McMurphy Street North was surveyed on July 16, 1968.

SUMMARY

On July 16, 1968, the quality of the wastes discharging from this plant to the McMurphy Street sanitary sewer, except for batch chromate dumps, complied with the proposed municipal by-law limits. The practise of periodically discharging untreated chromate solution from the recirculated spray system to the sanitary sewer should be discontinued. The company should initiate the use of the batch treatment tank for reduction and precipitation of chromium bearing wastes.

The plant effluent, discharging to the sump at the rear of the plant, had a suspended solids concentration in excess of the OWRC objective and contained inexplicable concentrations of metals. It is recommended that the company determine the source of this metal contamination and take action to reduce the suspended solids concentration.

DETAILS OF SURVEY

| | |
|-----------------------|--|
| Personnel Interviewed | - Mr. Wm. Meisner, General Manager |
| Number of Employees | - 60 |
| Operating Schedule | - 1-1/2 shifts/day (expanding to 2 shifts/day by October, 1968) |
| | - 5 days per week |

Description of Plant Process

This company puts a rust resistant primary paint coat on automotive parts such as rear light panels, fenders and tail gates. The parts are cleaned, bonderized, sprayed with primary paint and dried. The two preparatory lines may be described as follows;

Bonderizing Line - The items to be treated are fastened to an overhead conveyor system and passed through a closed tunnel where they are sprayed with recirculated solutions. The spraying order is;

- 1) Caustic Cleaner
- 2) Hot Water Rinse
- 3) Phosphate Solution
- 4) Hot Water Rinse
- 5) Chromic Acid Solution

The items leave the tunnel, pass over a drip tray, and are conveyed through a water floored primer spray booth. After forced air drying, the parts are packaged and shipped to automotive assembly plants.

Dipping Line - The small chrome parts to be painted are dipped in a series of tanks in the following order;

- 1) Caustic Cleaner
- 2) Caustic Cleaner
- 3) Hot Water Rinse
- 4) Chromic Acid Solution
- 5) Water Rinse
- 6) Deionized Water Rinse
- 7) Deionized Water Rinse

The parts are then spray painted, packaged and shipped.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 18,300 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|-------------------------------|-----------------------------|
| Bonderizing Sys- tem | 10,050 |
| Dipping Line | 2,450 |
| Compressor Cool- ing Water | 4,750 |
| Domestic | 1,050 |
| Total | <hr/> 18,300 |

Sources and Disposal of Wastes

The volume and dumping schedule for the tanks in the bonderizing system are summarized in Table II.

TABLE II

| CONTENTS | VOLUME (gallons) | SCHEDULE |
|------------------------------|---------------------|------------|
| Caustic Cleaner | 3,000 | 1/6 weeks |
| Hot Water (running rinse) | 2,500 | 1/week |
| Phosphate Solution | 1,050 | not dumped |
| Hot Water (running rinse) | 950 | 1/week |
| Chromic Acid Solution | 950 | 1/4 weeks |

When the caustic cleaner is dumped, the two rinse tanks are dumped simultaneously. The same procedure is followed when the chromic acid is dumped. The sludge is removed manually from the bottom of these tanks and transported to the dump in barrels. The phosphate solution is not dumped. When the phosphate tank is cleaned, the phosphate solution is stored in a rinse tank.

The company has installed a 2,000 gallon batch treatment tank for the spent chromate solution, but this tank is not being used.

All wastes from this section discharge to the McMurchy Street sanitary sewer.

The volumes and dumping schedule for the tanks in the dipping line are given in Table III.

TABLE III

| CONTENTS | VOLUME (gallons) | SCHEDULE |
|-----------------------|---------------------|--------------|
| Caustic Cleaner | 45 | 1/week |
| Caustic Cleaner | 45 | " |
| Hot Running Rinse | 45 | - |
| Chromic Acid Solution | 45 | 1/week |
| Still Water Rinse | 45 | 1/week |
| Deionized Water Rinse | 45 | recirculated |
| Deionized Water Rinse | 45 | " |

All wastes from this section discharge to a sump, and are then pumped overhead to the sanitary sewer.

The only other industrial waste discharged to the sanitary sewer is the weekly discharge of wastes from the spray booth (2,000 gallons). The liquid wastes are drained off and the paint solids collected in barrels for land disposal.

Compressor coolant, roof drainage, and wastes from the loading area are collected in a sump at the rear of the plant and discharge to Fletcher's Creek via a ditch.

SAMPLING AND ANALYSIS

Samples were obtained on July 16, 1968, at the following locations;

- 1) Grab of alkali wash (1500 hours).
- 2) Grab of chromic acid solution (1445 hours).
- 3) Grab of effluent to sump at rear of plant (1545 hours).
- 4) Grab of effluent from bonderizing section (1530 hours).

The samples were submitted to the OWRC laboratory for analysis in accordance with procedures in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. Analytical results are summarized on the appended industrial waste analysis sheet.

WASTE LOADINGS

The waste loadings from this plant to the watercourse and sanitary sewer are summarized in Table IV.

TABLE IV

WASTE LOADINGS

| TYPE OF FLOW | FLOW (gpd) | SUSPENDED SOLIDS | | PHOSPHATES | | ZINC | | CHROMIUM | | IRON | |
|--|---------------|------------------|---------|------------|---------|------|---------|----------|---------|------|---------|
| | | ppm | lbs/day | ppm | lbs/day | ppm | lbs/day | ppm | lbs/day | ppm | lbs/day |
| effluent to sanitary sewer from bonderizing section | 10,050 | 109 | 11.0 | 102 | 10.3 | 10.0 | 1.0 | 1.1 | 0.11 | 20.3 | 2.0 |
| proposed by-law limits | | 350 | | - | | 10.0 | | 10.0 | | - | |
| effluent to watercourse at rear of plant | 5,400 | 40 | 2.2 | 38 | 2.1 | 4.0 | 0.2 | 0.56 | 0.03 | 2.24 | 0.1 |
| OWRC limits for discharge to a watercourse | | 15 | | - | | 5.0 | | 1.0 | | 17.0 | |

ppm - parts per million

DISCUSSION OF FINDINGS

The concentration of suspended solids (40 ppm) in the effluent discharging from the sump at the rear of the plant is in excess of the OWRC objective (15 ppm) for discharge to a watercourse. The effluent also contains traces of zinc, phosphate, iron and chromium. Initially, the bonderizing wastes were discharged to this sump, however, two months previous to this survey these wastes were diverted to the sanitary sewer.

The concentration of chrome (190 ppm) in the chromate solution dumped to the sanitary sewer is in excess of the proposed municipal by-law limit (10 ppm), even if diluted by the discharge of the two rinse tanks (concentration after dilution estimated at 50 ppm). The discharge of this chromate solution imposes a waste loading of 1.8 pounds of chromium per dump.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey the concentration of suspended solids in the effluent discharging from the sump at the rear of the plant was in excess of the OWRC objectives for discharge to a watercourse. It is recommended that an investigation be initiated to locate the source of metals in this effluent and action be taken to minimize the suspended solids concentration.

The discharge of the untreated chromate solution should be discontinued. It is recommended that the company use the batch treatment tank already installed on their premises for the reduction and precipitation of chromium.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: D.J. Harris *

c.c. Chem. Lab. *

Source: Butcher Engineering Enterprises
Ltd.

(rj)

Date Sampled: July 16/68 by: D.J.Harris

| Lab. No. | 5-Day B.O.D. | Solids | | | Phosphate as PO ₄ | Zinc as Zn | pH at Lab. | Total Chromium as Cr | Iron as Fe | Acidity as CaCO ₃ | Alkalinity as CaCO ₃ | |
|--|-----------------|--------|-------|-------|---------------------------------|---------------|---------------|----------------------------|---------------|------------------------------------|---------------------------------------|--|
| | | Total | Susp. | Diss. | | | | | | | | |
| T-1852 | 1280 | 7896 | 2738 | 5158 | --- | 4.1 | 8.7 | --- | 10.5 | --- | 1072 | |
| T-1853 | --- | --- | --- | --- | --- | 1.18 | 6.0 | 190. | 4.5 | 268 | --- | |
| T-1854 | 5.4 | 504 | 40 | 464 | 38 | 4.0 | 7.1 | 0.56 | 2.24 | --- | --- | |
| T-1855 | 14. | 602 | 109 | 493 | 102 | 10.0 | 7.1 | 1.1 | 20.30 | --- | --- | |
| By-Law Objectives for sanitary sewers | 400 | | 350 | | | 10.0 | 5.5 - 9.5 | 10.0 | | | | |
| OWRC objectives for storm sewers | 15 | | 15 | | | 5 | 5.5 - 9.5 | 1.0 | 17.0 | | | |

| | | |
|--------|---|---|
| T-1852 | 1 | Alkali Wash (Grab 3.00 p.m.) |
| T-1853 | 2 | Chromic Acid Solution (Grab 2.45) |
| T-1854 | 3 | Effluent to Sump at Rear of Plant (Grab 3.45) |
| T-1855 | 4 | Effluent from Bonderizing Section |

CALUMET AND HECLA (CANADIAN) LIMITED -
FLEXONICS DIVISION

This plant, located at 134 Nelson Street West, was surveyed on July 18, 1968.

SUMMARY

At the time of this survey the concentration of mineral oil in the plant effluent discharging to the Nelson Street sanitary sewer was in excess of the proposed municipal by-law limit. As these wastes did not appear to be adversely affecting the sanitary sewerage system, no recommendations are made at this time.

DETAILS OF SURVEY

Personnel Interviewed - Mr. J. Pullen, Plant Manager
Number of Employees - 100
Working Schedule - 8 hours per day
- 5 days per week

Description of Plant Process

This company manufactures flexible metal hoses, expansion joints, compensators and bellows. A large number of lathes, punches and presses are used in their manufacture. The only wet process is a bright dip and pickling operation.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 15,750 gallons per day. Estimated distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|---------------|-----------------------------|
| Domestic | 2,500 |
| Cooling Water | 12,250 |
| Rinse Water | 1,000 |
| Total | 15,750 |

Sources and Disposal of Wastes

The major use of water in this plant is for the cooling of welding machines, air compressors and a vapour degreaser.

The major sources of contaminated water are the bright dip (sulfuric acid) and pickling (nitric acid) operations. The running rinses (approximately 5 gallons per minute), used in conjunction with these operations, combine with the cooling water and discharge to the Nelson Street sanitary sewer. Approximately once every four months, the two acid solutions (350 gallons H_2SO_4 and 230 gallons HNO_3) are neutralized and dumped into a pit located behind the plant.

SAMPLING AND ANALYSIS

On January 29, 1969, two grab samples were taken of the plant effluent discharging to the sanitary sewer.

These samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheet.

WASTE LOADINGS

The waste loading to the sanitary sewer from this plant is summarized in Table II. The average concentrations of the two grab samples were used to calculate this loading.

TABLE II

| VOLUME (gallons) | SUSPENDED SOLIDS | | BIOCHEMICAL OXYGEN DEMAND (BOD ₅) | | ETHER SOLUBLES | |
|---------------------|---------------------|---------|---|---------|-------------------|---------|
| | ppm | lbs/day | ppm | lbs/day | ppm | lbs/day |
| 15,750 | 40 | 6.3 | 28 | 4.4 | 25 | 4.2 |
| | 350* | | 400* | | 15* | |

NOTE: ppm - parts per million

* - proposed municipal by-law limits

DISCUSSION OF FINDINGS

Due to the type of manufacturing conducted at this plant, it is probable that the ether soluble concentration represents mineral oil

present in the waste. The concentration of ether soluble material (25 ppm) in the plant effluent discharged to the Nelson Street sanitary sewer is in excess of the proposed municipal by-law limit of 15 ppm for mineral oil.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey, the concentration of mineral oil in the waste discharging from this plant exceeded the proposed municipal by-law limit. However, this waste does not appear to be adversely affecting the municipal sanitary sewerage system.

No recommendations are made at this time.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| | | | | | |
|---|--|-------------------------------|--|---------------------------|--|
| Municipality: Brampton | | Report to: D.J. Harris * | | c.c. Chem. Lab.* /rd | |
| Source: Calumet and Hecla (Canadian) Limited - Flexonics Div. | | | | | |
| Date Sampled: Jan. 29/69 by: D.J. Harris | | | | | |

| Lab. No. | 5-Day B.O.D. | Solids | | | pH at Lab. | C.O.D. | Ether Solubles | | | | | | |
|--|-----------------|--------|-------|-------|------------------|--------|-------------------|------------------|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T-84 | 26 | 530 | 30 | 500 | 6.9 | 58 | 13 | | | | | | |
| T-85 | 30 | 560 | 50 | 510 | 6.3 | 140 | 36 | | | | | | |
| By-Law Objec- tives for sanitary sewers | 400 | | 350 | | 5.5 - 9.5 | | 15 | (mineral oil) | | | | | |

| | |
|------|---|
| T-84 | 1. Effluent to Sanitary Sewer (10:30 a.m.) |
| T-85 | 2. Effluent to Sanitary Sewer (11:30 a.m.) |

CANADA FERRO COMPANY

This plant, located at 19 Rutherford Road, was surveyed on August 15, 1968.

SUMMARY

Except for a high pH value, the quality of the wastes discharging from this plant to the Rutherford Road sanitary sewer on August 15, 1968, complied with the proposed municipal by-law limits. The cyanide treatment system was operating efficiently, resulting in a 99.0% overall reduction in cyanide concentration.

DETAILS OF SURVEY

| | |
|-----------------------|---|
| Personnel Interviewed | - Mr. J. Wardrop, Plant Manager |
| | - Mr. T. Pollard, Plant Foreman |
| Number of Employees | - 100 |
| Operating Schedule | - 16 hours per day (24 hours per day late in 1968) |
| | - 5 days per week |

Description of Plant Process

This company manufactures lock parts for the automotive industry. The process consists of punching, pressing, welding and plating operations. There are two zinc plating lines; an automatic plater (udylite) for large items and a two barrel plating line for smaller items. In the same general area there is also a dipping line and a phosphating line (see Figure I).

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at the average rate of 80,000 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------------------------------|-----------------------------|
| Domestic | 2,500 |
| Compressor and 3 Spot Welders | 25,000 |
| Plating and 2 Spot Welders | 52,500 |
| Total | 80,000 |

Sources and Disposal of Wastes

Cooling water from a compressor and three spot welders, boiler blowdown, and all roof drains discharge to a creek at the rear of the plant. The cooling water from the remaining two spot welders is used as the source of water for the two running rinses on the barrel plating line.

All running rinses following the zinc cyanide baths discharge to a treatment unit known as the "Epurix" Effluent Purification Unit. In this unit, cyanides are oxidized to cyanates by the addition of sodium hypochlorite and sodium hydroxide (alkaline chlorination). Chemical

addition is controlled by oxidation-reduction potential regulated valves. The treated wastes discharge to the sanitary sewer via two baffled tanks connected in series (total retention time of thirty minutes).

All other rinses (uncontaminated by cyanide) discharge to the sanitary sewer, by-passing the treatment unit and retention tanks.

SAMPLING AND ANALYSIS

On August 15, 1968, samples were composited at half-hourly intervals between 1030 hours and 1500 hours at the following locations;

- 1) Mixing tank before "Epurix" Unit.
- 2) Effluent from "Epurix" Unit.
- 3) Effluent from second retention tank.
- 4) Effluent to Rutherford Road sanitary sewer.

A grab sample was obtained at 1150 hours of the plant effluent discharging to the creek.

These samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. A summary of the results is appended to this report.

WASTE LOADINGS

The waste loading from this plant to the sanitary sewer, based on an estimated flow of 52,500 gallons per day, is summarized in Table II.

TABLE II

| SUSPENDED SOLIDS | | ZINC | | CYANIDE | |
|------------------|---------|------|---------|---------|---------|
| ppm | lbs/day | ppm | lbs/day | ppm | lbs/day |
| 60 | 31.5 | 5.2 | 2.73 | 0.1 | 0.05 |
| 350* | | 10* | | 5* | |

NOTE: ppm - parts per million

* - proposed municipal by-law

DISCUSSION OF FINDINGS

The "Epurix" Effluent Purification Unit is effecting an 86.4% reduction of the cyanide concentration (27.6 \longrightarrow 2.9 ppm). This is further reduced by retention in the baffled tanks (2.9 \longrightarrow 0.24) and by dilution on mixing with the other rinse streams (0.24 \longrightarrow 0.10 ppm). The baffled tanks are effecting a 64.9% reduction in suspended solids concentration (259 \longrightarrow 91 ppm) and a 50% reduction in zinc concentration (56 \longrightarrow 28 ppm). Subsequent dilution by other rinses further reduces these concentrations to 60 ppm suspended solids and 5.2 ppm zinc.

The effluent discharging to the sanitary sewer complied with the proposed municipal by-law limits except for the high pH value of

10.2 (proposed municipal by-law limits 5.5 - 9.5).

The effluent discharged to the creek at the rear of the building complied with OWRC water quality objectives.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey the "Epurix" unit was effectively oxidizing cyanides to cyanates and the baffled tanks were effectively reducing the suspended solids concentration, as well as providing retention time for further reduction of cyanide. Overall, the treatment system was achieving a 99.0% reduction of cyanide and a 40.5% reduction of suspended solids.

It is recommended that this company investigate methods of reducing the pH of the effluent discharged to the sanitary sewer to meet proposed municipal by-law limits.

[illegible]

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: David J. Harris *

C.C. Chem. Lab. *

Source: Canada - Ferro Company Ltd.

Date Sampled: Aug. 15/68 by: D.J. Harris

(rj)

| Lab. No. | 5-Day B.O.D. | Solids | | | pH at Lab. | Alkalinity as CaCO ₃ | Zinc as Zn. | Cyanide as HCN | Chromium as Cr. | Phosphate as PO ₄ | COD | | |
|-------------|-------------------|-------------------|-------|-------|---------------|------------------------------------|----------------|-------------------|--------------------|---------------------------------|-----|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T-2498 | | 1238 | 153 | 1085 | 11.2 | 451 | 56. | 27.6 | --- | --- | 40 | | |
| T-2499 | | 2734 | 259 | 2475 | 11.8 | 615 | 56. | 2.9 | --- | --- | 49 | | |
| T-2500 | | 2538 | 91 | 2447 | 11.6 | 548 | 28. | 0.24 | --- | --- | 16 | | |
| T-2501 | | 798 | 60 | 738 | 10.2 | 217 | 5.2 | 0.10 | 0.0 | 4.4 | 51 | | |
| T-2497 | Ether Solubles | Phenols in ppt | | | | | | | | | | | |
| | trace * | 15 | | | * less than | 2 ppm | | | | | | | |

| | | |
|--------|---|--|
| T-2497 | 5 | Effluent to creek at rear of building (Grab 11.50 PM) |
| T-2498 | 1 | Mixing Tank (Before Treatment) 10.30 AM - 3.00 PM |
| T-2499 | 2 | Effluent from Treatment Unit 10.30 AM - 3.00 PM |
| T-2500 | 3 | Effluent from number two retention tank (10.30 am - 3.00 PM) |
| T-2501 | 4 | Total Effluent from Plant to Sanitary Sewer (10.30 AM - 3.00 PM) |

CANADIAN BAKER PERKINS LIMITED

This plant, located at 27 Hansen Road, was inspected on January 22, 1969.

DETAILS OF SURVEY

Personnel Interviewed - Mr. W. Cumming, Vice-President of Manufacturing
Number of Employees - 70
Operating Schedule - 8-1/2 hours per day
- 5 days per week

Description of Plant Process

This industry produces bakery equipment, such as ovens and food conveyors.

Water Consumption and Distribution

Water is purchased for domestic and industrial purposes from the Brampton PUC at an average rate of 2,900 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 1,750 |
| Cooling | 1,150 |
| Total | 2,900 |

Sources and Disposal of Wastes

Spot welder cooling water discharged to the Hansen Road sanitary sewer is the only industrial waste emanating from this plant.

SAMPLING AND ANALYSIS

Samples were not obtained as the cooling water discharge was enclosed.

CONCLUSIONS AND RECOMMENDATIONS

Wastes discharged from this plant should not adversely effect the municipal sewerage system.

No recommendations are made at this time.

CIL MASTEX INDUSTRIES LIMITED

This plant, located at 134 Kennedy Road South, was surveyed on March 4, 1969.

DETAILS OF SURVEY

| | | |
|-----------------------|---|---|
| Personnel Interviewed | - | Mr. R. Huggard, Works Engineer |
| | - | Mr. M.H. Steele, Maintenance Superintendent |
| Number of Employees | - | 250 |
| Operating Schedule | - | 24 hours per day |
| | - | 7 days per week |

Description of Plant Process

Plastic bags and film used for packaging and wrapping are produced at this plant. Extruders of various sizes produce bags ranging in type from thin clear bread bags to heavy opaque fertilizer bags. The polyethylene is extruded hot, blown into a bubble, collapsed, heat fused at specific lengths, cut and packaged.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 21,600 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 5,000 |
| Cooling | <u>16,600</u> |
| Total | 21,600 |

Sources and Disposal of Wastes

The major industrial use of water at this plant is for the cooling of extruders and compressors. For this purpose there are two closed refrigerated cooling units, each with a bleed-off to the Kennedy Road sanitary sewer.

Water is also used in a waste plastic reclaiming process. The waste plastic is ground, heated and pelletized. Water, which is used as a combined coolant and transport medium to allow easy collection of pellets, is recycled with a temperature controlled overflow discharged to a tributary of Etobicoke Creek. In the past, a problem was encountered with pellets reaching the creek. As a corrective measure, the company has installed a fine mesh screen.

SAMPLING AND ANALYSIS

Grab samples were obtained of the following streams on March 4 and February 6, 1969.

- 1) cooling water discharge to creek (930 hours)
- 2) cooling water discharge to sanitary sewer (1400 hours)

The samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. Analytical results are summarized on the appended industrial waste analysis sheet.

DISCUSSION OF FINDINGS

The cooling water discharging to the Kennedy Road sanitary sewer complied with the proposed municipal by-law limits in terms of suspended solids and phenol concentration.

The concentration of suspended solids (90 ppm) in the cooling water discharging to the creek was in excess of the OWRC water quality objective (15 ppm). The screen was removing the large plastic particles from the discharge stream but small particles were still passing through.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey the cooling water discharging to the creek did not comply with OWRC water quality objectives.

It is recommended that the company install a screen of finer mesh than the one presently in use.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb. / 100,000 Imp. Gals.

| Municipality: Brampton | | Report to: David J. Harris | | | | c.c. Chem. Lab. | | | | | | |
|-------------------------------|---|----------------------------|-------|-------|-----------|----------------------|-------------------|--|--|--|--|--|
| Source: CIL-MASTEX | | | | | | | | | | | | |
| Date Sampled: Apr. 23, 1969 | | | | | | | | | | | | |
| Feb. 6, 1969 by: D. J. Harris | | | | | | | | | | | | |
| Lab. No. | 5-Day B.O.D. | Solids | | | pH | Phenols in ppb | Ether Solubles | | | | | |
| | | Total | Susp. | Diss. | | | | | | | | |
| T-222 | 3.5 | 250 | 90 | 160 | 7.7 | 6 | - | | | | | |
| OWRC Objective | 15 | | 15 | | 5.5 - 9.5 | 20 | - | | | | | |
| T-109 | 0.6 | 280 | 4 | 276 | - | - | 6 | | | | | |
| Proposed By-law Limits | | | 350 | | | | 15 | | | | | |
| T-222 | 1 Plastic Reclaiming Cooling Water Discharged to Creek (grab 9:30 a.m.) | | | | | | | | | | | |
| T-109 | 2 Grab of recirculated cooling water (2:30 p.m.) | | | | | | | | | | | |

CHARTERS PUBLISHING COMPANY LIMITED

This plant, located at 10 Henderson Avenue, was surveyed on August 23, 1968.

DETAILS OF SURVEY

Personnel Interviewed - Mr. N. Sanger, Plant Manager
Number of Employees - 100
Operating Schedule - 7-1/2 hours per day
- 5 days per week

Description of Plant Process

This company is engaged in the printing of weekly newspapers and custom sheets, (advertising and promotion pamphlets).

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 7,700 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|---|-----------------------------|
| Domestic | 2,500 |
| Cooling water and Boiler Make- up | 5,200 |
| Total | <hr/> 7,700 |

Sources and Disposal of Liquid Wastes

Cooling water and boiler blowdown, discharged to the Henderson Avenue storm sewer, are the only industrial wastes. Cooling water is utilized in the following plant processes:

- 1) dies on two L-rod machines (L-rods are used as spacers in setting of print),
2. dies on two printing plate mold machines.

At the time of this survey the boiler was not operating.

SAMPLING AND ANALYSIS

A sample of the plant effluent discharging to the storm sewer was obtained on August 23, 1968, and submitted to the OWRC laboratory for analysis of solids, pH, COD and ether soluble material in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheet.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey the quality of the cooling water discharged from this plant (sample T-2588) to the storm sewer complied with OWRC water quality objectives.

No recommendations are made at this time.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| | | | | | | | | | | | |
|---------------|--|-------------------------------------|--|------------|--|---------------|--|------------------|--|--|--|
| Municipality: | | Brampton | | Report to: | | D.J. Harris * | | C.C. Chem. Lab.* | | | |
| Source: | | Charters Publishing Company Limited | | | | | | | | | |
| Date Sampled: | | Aug. 23/68 | | by: | | D.J. Harris | | /rd | | | |

| Lab. No. | 5-Day B.O.D. | Solids | | | Ether Solubles | pH at Lab. | C.O.D. | | | | | |
|----------------|--------------|--------|-------|----------------------|----------------|------------|--------|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | |
| T-2588 | | 464 | 3 | 461 | tr. | 7.9 | 28 | | | | | |
| OWRC Objective | | | 15 | TR = less than 2 ppm | 15 | 5.5 - 9.5 | - | | | | | |

| | |
|--------|---|
| T-2588 | 1. Plant Effluent to Storm Sewer (Grab 9:30 a.m.) |
|--------|---|

CHUB-MOSLER AND TAYLOR SAFES LIMITED

This plant, located at 263 Queen Street East, was surveyed on March 4, 1969.

SUMMARY

At the time of this survey, the quality of the liquid wastes discharged to the ditch at the rear of the plant complied with OWRC water quality objectives in terms of suspended solids, phenols, ether soluble material and pH. Cement washings are discharged to a location remote from any watercourse thus negating the possibility of water pollution.

DETAILS OF SURVEY

| | | |
|-----------------------|---|------------------------------|
| Personnel Interviewed | - | Mr. R. Castle, Plant Manager |
| Number of Employees | - | 283 |
| Operating Schedule | - | 8 hours per day |
| | - | 5 days per week |

Description of Plant Process

Safes are manufactured in dry machining, forming, spray painting and insulating operations. The insulation is composed of cement and refractory material.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes at an approximate rate of 18,600 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 7,100 |
| Process | <u>3,600</u> |
| Total | 10,700 |

Sources and Disposal of Wastes

Two separate plant sewer systems lead to a ditch south of the plant. The east sewer carries wastes from a drinking fountain, roof drains and weeping tiles around the foundations of the building. The west sewer carries wastes from compressor cooling (2), spot welder cooling (2), roof drains and a steam cleaning operation. During this survey the west sewer had a flow of approximately 6 gallons per minute while the east sewer had no flow. The ditch joins a natural watercourse that is a tributary of Etobicoke Creek.

At the end of each operating day the insulation process area and the insulation mixer are washed. This wash water flows by gravity into a settling sump and is then pumped overhead to a location at the rear (south) of the plant remote from any watercourse.

The only other industrial waste emanating from this plant is the batch discharge of wastes from two water-walled spray booths (volume: 1,000 gallons and 500 gallons) to the Queen Street sanitary

sewer. Each paint booth is cleaned and dumped every three weeks. The sludge is skimmed from each booth and land dumped at the end of each operating day.

SAMPLING AND ANALYSIS

A grab sample of the effluent discharged from the west sewer was obtained on January 29, 1969, and submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition.

Analytical results and OWRC water quality objectives are summarized on the appended industrial waste analysis sheet.

DISCUSSION OF FINDINGS

The concentration of suspended solids, ether soluble materials and phenols in the effluent discharged from the west sewer at the rear of the plant complied with OWRC water quality objectives.

The discharge of the cement washings to a location remote from any watercourse eliminates the possibility of water pollution from this source.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey the effluent discharging to the ditch at the rear of this plant complied with OWRC water quality objectives. The wastes discharging to the sanitary sewer were having no adverse effect on the municipal sewerage system.

No recommendations are made at this time.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| Municipality: Brampton | | Report to: David J. Harris * | | c.c. Chem. Lab.* /rd | | | | | | | | | |
|---|--|-------------------------------------|----------|-----------------------------|----------------------|-------------------|------------------|--|--|--|--|--|--|
| Source: Mosler - Taylor Safes Ltd. | | | | | | | | | | | | | |
| Date Sampled: Jan. 29/69 | | by: D.J.H. | | | | | | | | | | | |
| Lab. No. | 5-Day B.O.D. | Solids | | | Phenols in ppb | Ether Solubles | pH at Lab. | | | | | | |
| | | Total | Susp. | Diss. | | | | | | | | | |
| T-78 | | 300 | 5 | 295 | 10 | 7 | 8.0 | | | | | | |
| OWRC Objectives | | | 15 | | 20 | 15 | 5.5 - 9.5 | | | | | | |
| T-78 | 1. Storm Effluent to ditch at rear of plant (Grab 10:10 a.m.) (2 Bottles) | | | | | | | | | | | | |

DESIGNED PRECISION CASTING LIMITED

This plant, located at 75 Eastern Avenue, was surveyed on January 29, 1969.

DETAILS OF SURVEY

Personnel Interviewed - Mr. J. Barnes, Plant Manager
Number of Employees - 75
Operating Schedule - 8 hours per day
- 5 days per week

Description of Plant Process

This company produces precision castings of most ferrous and non-ferrous alloys for the aircraft, electrical and chemical industries.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an approximate rate of 4,180 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 1,875 |
| Process | 2,305 |
| Total | 4,180 |

Sources and Disposal of Wastes

The major use of water in this plant is for the cooling of compressors and an induction motor. Other usages are for autoclave steam, for the mixing of refractory cement and for washing of cement mixing equipment. Cement washings flow through a series of three settling tanks before discharging along with all other wastes to the sanitary sewer.

SAMPLING AND ANALYSIS

A sample of the wash effluent was not obtained as there was no washing being conducted at the time of this survey.

CONCLUSIONS AND RECOMMENDATIONS

The small volume of cement washings discharged to the sanitary sewer should have no adverse effect on the sewerage system.

No recommendations are made at this time.

GENERAL LATEX AND CHEMICALS LIMITED

This plant, located at 68 Eastern Avenue, was inspected on January 29, 1969.

SUMMARY

At the time of this survey, the concentration of suspended solids in the latex wash water discharged to the sanitary sewer was in excess of the proposed municipal by-law limit.

It is recommended that the company clean the settling system on a more frequent basis.

DETAILS OF SURVEY

| | | |
|-----------------------|---|--|
| Personnel Interviewed | - | Mr. J. C. Sturgeon, Plant Superintendent |
| Number of Employees | - | 25 |
| Operating Schedule | - | 8-1/2 hours per day |
| | - | 5 days per week |

Description of Plant Process

Latex emulsions are prepared by the combination of synthetic latex, natural latex and additives in a grinder mixer.

These emulsions are distributed to the textile, paint and glue industries.

Water Consumption and Distribution

Water is purchased for domestic and industrial purposes from the Brampton P.U.C. at an approximate rate of 6,820 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 625 |
| Process | 6,195 |
| Total | <u>6,820</u> |

Source and Disposal of Liquid Waste

Synthetic and natural latex are stored in large mixing tanks which are washed when emptied. The initial wash water is collected in barrels for land disposal at an authorized site, while subsequent washings are discharged to the Eastern Avenue sanitary sewer via a settling system (Figure I).

In this system, sulfuric acid is added to the parallel settling basins to aid in the removal of latex. A rubbery scum is formed on the surface of the solution and is removed before the solution is pumped to a series of seven settling basins located outside the plant. Mr. Sturgeon reported that these settling basins are cleaned three times per year.

The only other industrial waste emanating from this plant is the cooling water from the grinder mixer (1,000 gallons per day) which is discharged to the sanitary sewer via a second connection.

SAMPLING AND ANALYSIS

On January 29, 1969, grab samples were taken at the following locations:

1. contents of final settling basin (1430 hours)
2. sanitary sewer manhole at street (1400 hours)

These samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended waste analysis sheet.

WASTE LOADINGS

The waste loading from this plant to the sanitary sewer during wash-up is summarized in Table II.

TABLE II.

| VOLUME | BIOCHEMICAL OXYGEN DEMAND (BOD ₅) | | SUSPENDED SOLIDS | | pH |
|--------|---|---------|---------------------|---------|------------|
| | ppm | lbs/day | ppm | lbs/day | |
| 1,000 | 41 | 0.5 | 500 | 5 | 7.0 |
| | 400* | | 350* | | 5.5 - 9.5* |

NOTE: ppm - parts per million

* - proposed municipal by-law limits

DISCUSSION OF FINDINGS

The wash water discharged from this plant to the sanitary sewer on January 29, 1969, had a suspended solids concentration (500 ppm) in excess of the proposed municipal by-law limit of 350 ppm. The settling facilities provided by this company appear to be adequate in design, but all sumps were in need of cleaning.

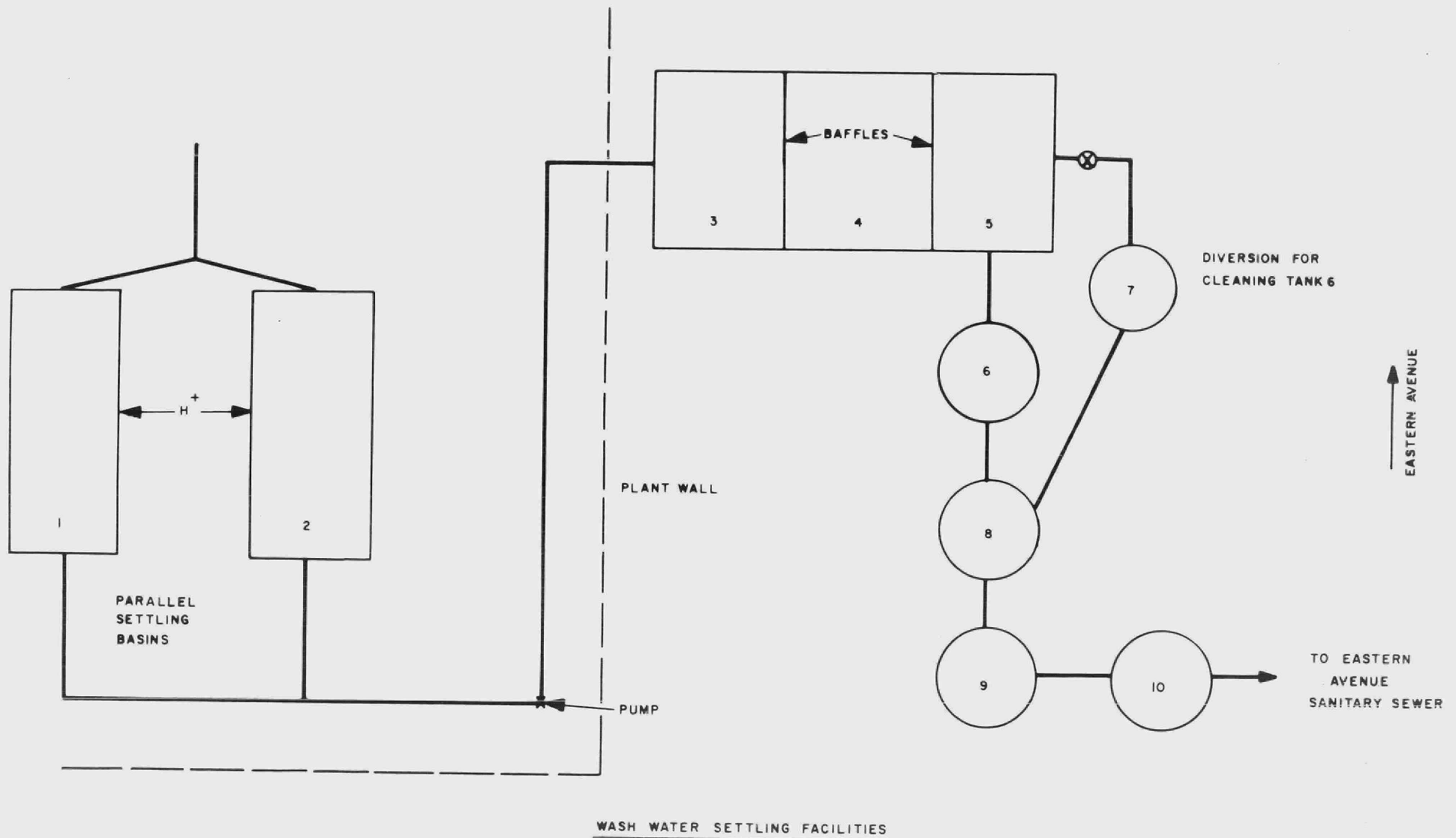
The addition of sumps 6, 7, 8, 9, and 10 (Figure I) since the 1965 survey has resulted in a reduction of suspended solids concentration in the final effluent from 2,900 ppm to 500 ppm.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey, the wash water effluent discharging from this plant to the sanitary sewer had a suspended solids concentration in excess of the proposed municipal by-law limit.

It is recommended that the company institute an improved maintenance programme for the settling system in order to keep the system operating efficiently.

FIG 1
GENERAL LATEX AND CHEMICALS LIMITED



ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: D. J. Harris

c.c.

Source: LATEX AND CHEMICALS LTD.

Date Sampled: Jan.29/69 by: D. J. Harris

| Lab. No. | 5-Day B.O.D. | Solids | | | pH at Lab. | COD | Turbi- dity units | | | | | | |
|--|-----------------|--------|-------|-------|---------------|------|-------------------------|--|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T-81 | 41 | 1200 | 500 | 700 | 7.0 | 1970 | 850 | | | | | | |
| T-82 | 50 | 940 | 360 | 580 | 6.9 | 1150 | 900 | | | | | | |
| By-Law Objec- tives for sanitary sewers | 400 | | 350 | | 5.5 - 9.5 | | | | | | | | |

- | | |
|------|--|
| T-81 | 1 Grab from Final settling basin (2.30 p.m.) |
| T-82 | 2 Grab from manhole of street sanitary sewer (2.00 p.m.) |

GUMMED PAPERS LIMITED

This plant, located at 12 Henderson Avenue, was inspected on July 11, 1968.

SUMMARY

The concentration of biochemical oxygen demand (BOD₅) in the wash waters discharged from this plant to the sanitary sewer on July 11, 1968, was in excess of the proposed municipal by-law limit. It was reported that this wash water did not adversely affect the sanitary sewerage system.

It is recommended that the Asphalt Section cooling water be directed to a storm sewer or watercourse.

DETAILS OF SURVEY

| | | |
|-----------------------|---|--------------------------------------|
| Personnel Interviewed | - | Mr. D. Hood, Manager |
| | - | Mr. W. Fendley, Assistant Millwright |
| Number of Employees | - | 120 |
| Operating Schedule | - | 16 hours per day |
| | - | 5 days per week |

Description of Plant Process

This company is engaged in the primary treatment of paper for use in other industries.

In the gummed papers section, glue is applied to paper and dried by a series of heated rollers, or by passing through a heated room, depending on the type of glue used.

In another area of the plant, asphalt laminated and asphalt coated papers are produced. These materials are used in the building industry and, therefore, production volume is seasonal. Crepe paper is also produced in this area.

A separate building houses a polyethylene film operation. Polyethylene pellets are extruded into a film which is used to coat paper for use in food packaging.

In the foil and lacquer section, aluminum foil is paper coated, and embossed. The embossed foil may then either be coloured by application of a lacquer, or be left plain. The finished foil is used in the packaging of cigarettes, candy bars, and gum.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an approximate rate of 50,200 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|-----------------------|-----------------------------|
| Sanitary and Domestic | 2,500 |
| Boiler Feed, Water) | |
| Softener) | 3,000 |
| Gum washing | 2,000 |
| Foil washing | 500 |
| Asphalt Cooling | 12,000 |
| Wax Cooling | 6,200 |
| Foil Brake Cooling | 7,000 |
| Compressor Cooling | 4,000 |
| Plastic Cooling | 13,000 |
| Total | 50,200 |

Sources and Disposal of Wastes

The sources of wastes from this plant may be summarized under the following headings.

Gummed Papers - The major use of water in this section is for the washing of rollers, containers and general cleanup of gluing machines. The wastewater from this area discharges into manhole 1 (Figure 1).

Asphalt Section - The two asphaltting machines are each equipped with a water cooled roller. This cooling water discharges to manhole 3 via manhole 4 (Figure I). Manhole 4 in the asphalt unloading area is curbed to ensure that any accidental spillage of asphalt will not reach the sewer.

Each week 250 gallons of a starch solution used in the production of crepe paper is discharged to the sanitary sewer.

Plastic Section - Water is used for the cooling of extruder dies and rollers. The wastewater discharges to Fletcher's Creek at the rear of the building.

Foil and Lacquer Section - A small amount of water is used for the washing of lacquer trays and rollers, however, the major use is for the cooling of the roller brakes. The wastewater discharges into manhole 2 (Figure 1).

SAMPLING AND ANALYSIS

On July 11, 1968, grab samples were taken of the following:

1. Cooling water from Polyethylene Section (1210 hours).
2. Cooling water from Asphalt Section rollers (1200 hours).
3. Effluent to sanitary sewer "Gumming Section Wash-up"
(1530 hours).
4. Effluent from trench in "Gumming Section" during wash-
up (1600 hours).
5. Crepe paper starch solution (1615 hours).

All samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheet.

WASTE LOADINGS

The waste loading from this plant to the sanitary sewer during wash-up (2000 gallons) is summarized in Table II.

TABLE II

| BIOCHEMICAL OXYGEN DEMAND | | SUSPENDED SOLIDS | | ETHER SOLUBLES | | PHENOLS | |
|------------------------------|---------|---------------------|---------|-------------------|---------|---------|---------|
| ppm | lbs/day | ppm | lbs/day | ppm | lbs/day | ppm | lbs/day |
| 3400 | 68 | 1234 | 24.7 | 46 | 0.9 | 0.16 | 0.003 |
| 400* | | 350* | | 100* | | 1.00* | |

ppm - parts per million

* - proposed municipal by-law limit

DISCUSSION OF FINDINGS

At the time of this survey, the quality of the cooling water discharged from the Plastic Section to Fletcher's Creek complied with OWRC water quality objectives.

The concentrations of BOD₅ and suspended solids in the wash water discharged to the sanitary sewer were in excess of the proposed municipal by-law limits.

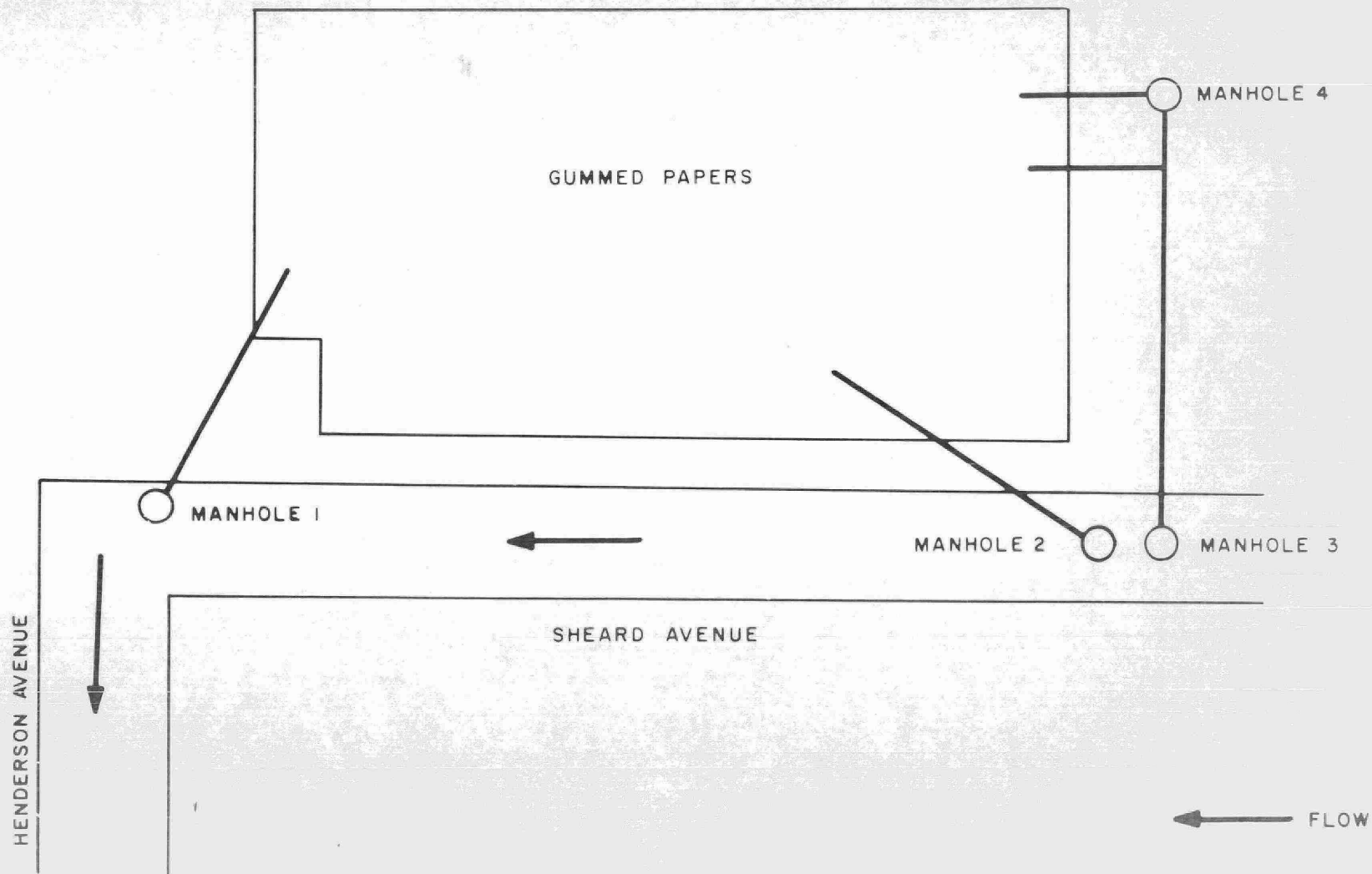
The quality of the cooling water emanating from the Asphalt Section complied with the proposed municipal by-law limits for discharge to a sanitary sewer.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey, the discharge of wash water (high in BOD₅ and suspended solids concentrations) was not adversely affecting the municipal sanitary sewerage system.

Consideration should be given to redirecting the Asphalt Section cooling water to a storm sewer or to a watercourse.

FIG I
GUMMED PAPERS



ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: David Harris *

c.c. Chem. Lab. *

Source: Gummed Papers Limited.

Date Sampled: July 11/68 by: D.Harris

(rj)

| Lab. No. | 5-Day B.O.D. | Solids | | | Ether Solubles | Phenols in ppb | pH at Lab. | | | | | | |
|-------------|-----------------|--------|-------|-------|-------------------|-------------------|---------------|--|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T-1768 | --- | --- | --- | --- | 13 | 5 | --- | | | | | | |
| T-1769 | --- | --- | --- | --- | 8 | 0 | --- | | | | | | |
| T-1770 | 3400 | 5050 | 1234 | 3816 | 46 | 160 | 4.9 | | | | | | |
| T-1771 | 38000 | 58074 | 18362 | 39712 | 33 | 600 | 4.5 | | | | | | |
| T-1772 | 5400 | 6530 | 4062 | 2468 | 11 | 120 | 5.3 | | | | | | |

| | | |
|--------|---|--|
| T-1768 | 1 | Cooling Water from Polyethylene Section (Grab - 12.10 p.m.) |
| T-1769 | 2 | Cooling Water for Asphalt Section Rollers (Grab - 12.01 p.m.) |
| T-1770 | 3 | Effluent to Sanitary Sewer at Manhole "Gumming Section" (Grab - 3.30 p.m.) |
| T-1771 | 4 | Effluent from Trench in "Gumming Section" - During Washup (Grab 4.00 p.m.) |
| T-1772 | 5 | Grab from Tank of Crepe Paper Machine (4.15 p.m.) |

IKO ASPHALT ROOFING COMPANY LIMITED

This plant, located at 71 Orenda Road, was inspected on August 2, 1968.

SUMMARY

The concentrations of suspended solids and biochemical oxygen demand (BOD₅) in the felt plant wash water discharging to the sanitary sewer on August 2, 1968, were in excess of the proposed municipal by-law limits. This is a weekly flow and has not to date caused a problem in the sanitary sewerage system.

The roofing section shower water discharging to the ditch had a suspended solids concentration in excess of the OWRC objective.

As a result of this survey, it is recommended that;

- 1) the emergency pumping system for the felt plant wash water be rerouted to the sanitary sewer,
- 2) the present settling facilities for the roofing section shower water be better maintained and, if necessary, further settling facilities be provided.

DETAILS OF SURVEY

Personnel Interviewed

- Mr. H. Koshitzky, Manager
- Mr. J. Harper, Felt Mill Superintendent
- Mr. B. Walker, Felt Machine Tender Foreman
- Mr. J. Parker, Asphalt Machine Tender Foreman

Number of Employees:

| | |
|---------------------|----------------|
| Felt Mill | - 18 |
| Roofing Section | - 27 |
| Shipping and Office | - 13 |
| | <hr/> 58 <hr/> |

Operating Schedule:

| | |
|-----------------|-----------------------|
| Felt Mill | - 24 hours per day |
| | - 5 days per week |
| Roofing Section | - 8-1/2 hours per day |
| | - 5 days per week |

Description of Plant Process

This company manufactures asphalt coated papers, roofing shingles, and roofing asphalt. The operations at this plant may be summarized under the following headings.

Felt Mill - The felt production process is illustrated in Figure I. Briefly, the various raw materials are mixed in slurries, refined and formed into a sheet which is dried by passage over suction boxes and through a drier section. This felt is used as the backing for roofing and shingles in the asphalt section.

Roofing Plant - Figure II is a schematic of the roofing section process. Shingles or rolled roofing are made by passing felt through hot asphalt and coating with grit. The process varies slightly depending on the type of product.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 115,400 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|---------------|-----------------------------|
| Roofing Plant | 77,950 |
| Felt Mill | 36,000 |
| Domestic | <u>1,450</u> |
| Total | 115,400 |

Sources and Disposal of Liquid Wastes

The sources of waste flows emanating from this plant are illustrated in Figure III. There are separate systems for the cooling water from the rollers and felt showers in the roofing plant. The cooling water from the rollers flows to a storage tank and the overflow discharges to a ditch. The felt shower water flows through a make-shift separator (a specially fitted barrel) and discharges via a catch basin to a second ditch.

Figure IV is a schematic of the waste flows in the felt plant. The system is closed with evaporation losses being compensated for by make-up from the holding tower or town water supply.

The major source of waste originating from this plant is the weekly washing of equipment and accompanying discharge of the contents of the white and dirty water chests (total volume - 2300 gallons). These wastes flow to a sump located in the basement and are pumped to the Kennedy Road sanitary sewer.

In emergencies a second pump discharges these wastes to a ditch (see Figure III).

SAMPLING AND ANALYSIS

The following grab samples were taken on August 2 and August 24, 1968;

- 1) Overflow from holding tank (1255 hours).
- 2) Effluent to ditch from roofing section (1330 hours).
- 3) Effluent from white water chest during wash-up (0900 hours).
- 4) Effluent from dirty water chest during wash-up (0900 hours).
- 5) Contents of sump during wash-up (0905 hours).

These samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. A summary of the results is appended to this report.

WASTE LOADINGS

The waste loading from this plant to the sanitary sewer is summarized in Table II.

TABLE II

| VOLUME (gallons) | SUSPENDED SOLIDS | | BIOCHEMICAL OXYGEN DEMAND | |
|---------------------|------------------|---------|------------------------------|---------|
| | ppm | lbs/day | ppm | lbs/day |
| 2300 | 4034 | 92. | 1100 | 25. |
| | 350* | | 400* | |

ppm - parts per million

* - proposed municipal by-law limits

NOTE: This loading is discharged over a portion of only
one operating day per week.

DISCUSSION OF FINDINGS

The roofing section shower water had a suspended solids concentration (50 ppm) in excess of the OWRC objective (15 ppm). At a flow of 6,000 gallons per day the resultant waste loading to the ditch was 3 pounds of suspended solids per day.

The overflow from the holding tank was of satisfactory quality.

The concentration of BOD₅ and suspended solids in the wash water effluent were in excess of the proposed municipal by-law limits for discharge to a sanitary sewer.

CONCLUSIONS AND RECOMMENDATIONS

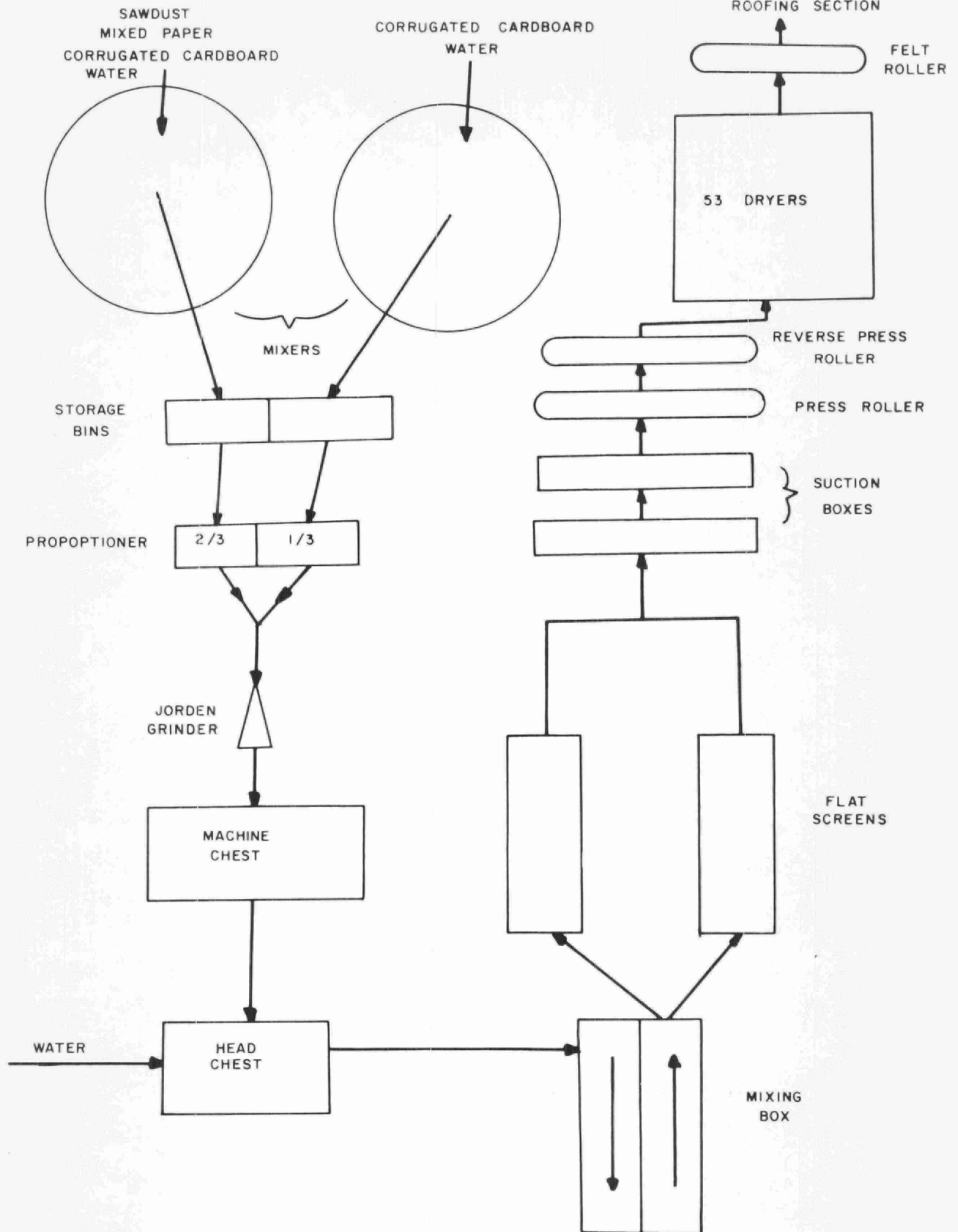
At the time of this survey the roofing section shower water had a suspended solid concentration in excess of the OWRC objective. It is recommended the present settling facilities be better maintained and, if necessary, further settling facilities be provided.

At the present time, the discharge of wash water high in BOD₅ and suspended solids concentration does not appear to be adversely effecting the municipal sanitary sewer system. In the future, however, should the discharge of these wastes prove deleterious to the operation of the sewerage system, the company should provide treatment or adopt alternative methods of waste disposal.

Under no circumstances should these wastes be discharged to the ditch outside the felt plant. The emergency pumping system should be rerouted to the sanitary sewer.

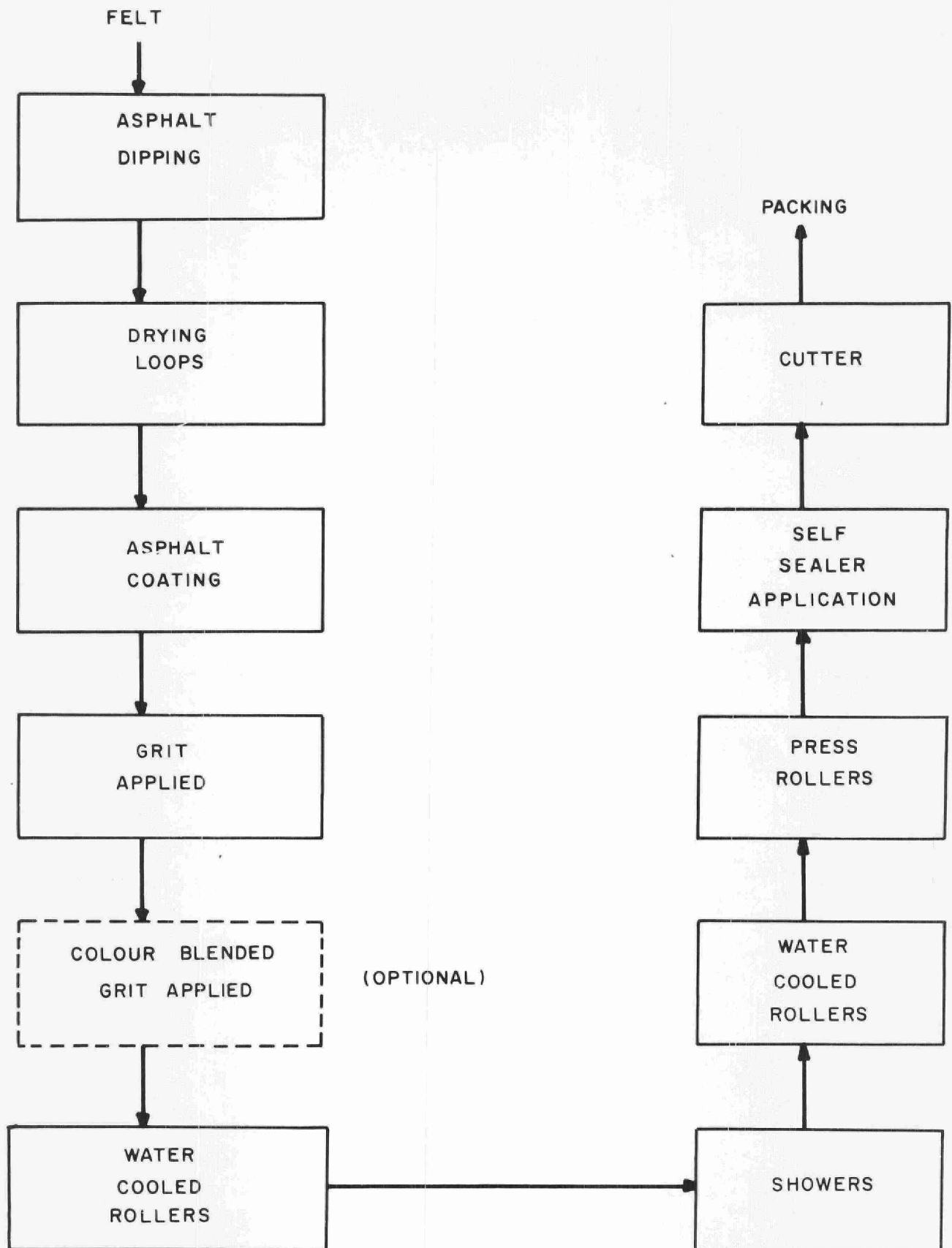
IKO ASPHALT ROOFING CO. LTD.
FELT PLANT OPERATIONS

FIG. 1



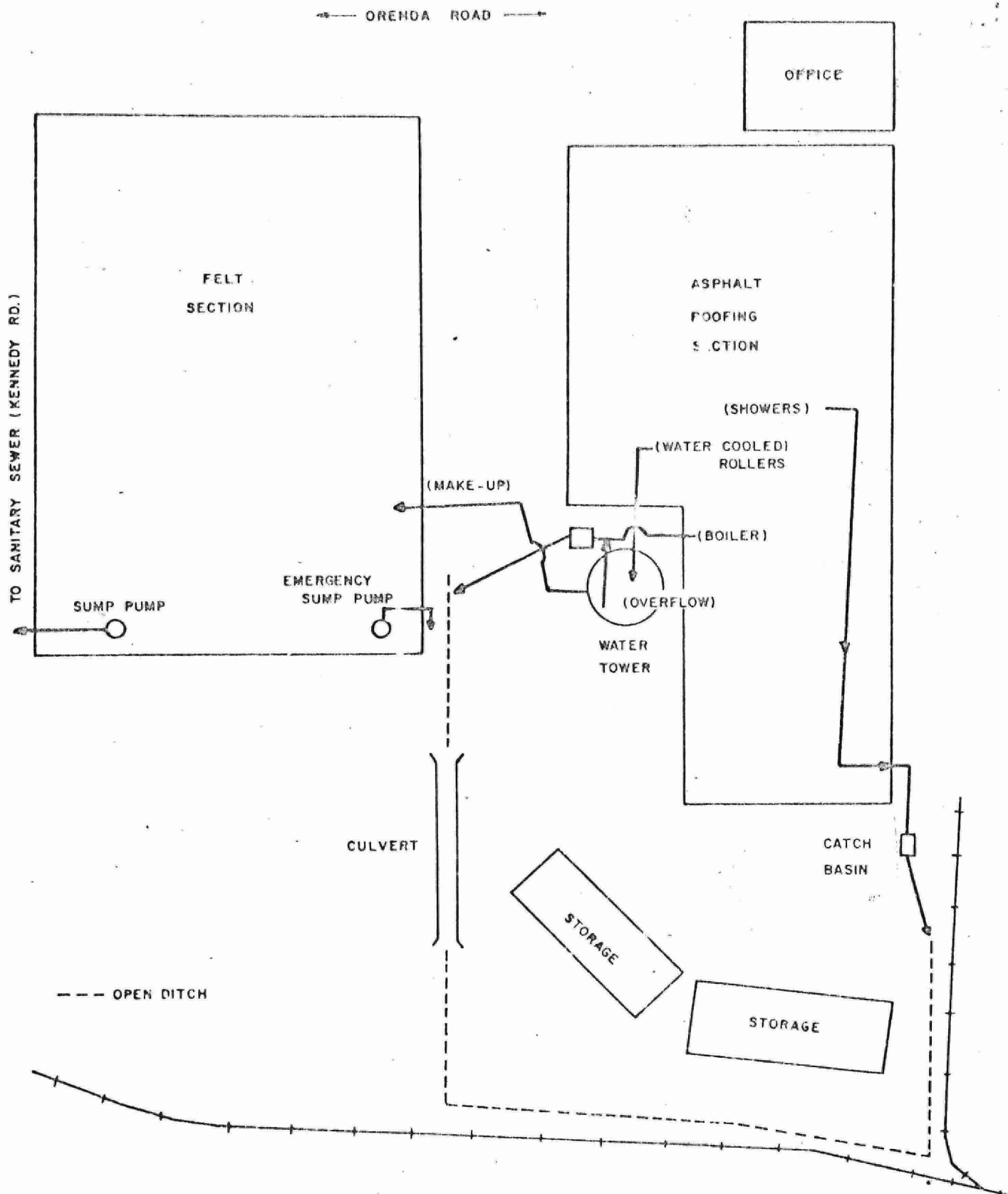
ASPHALT ROOFING PLANT OPERATIONS

FIG. II

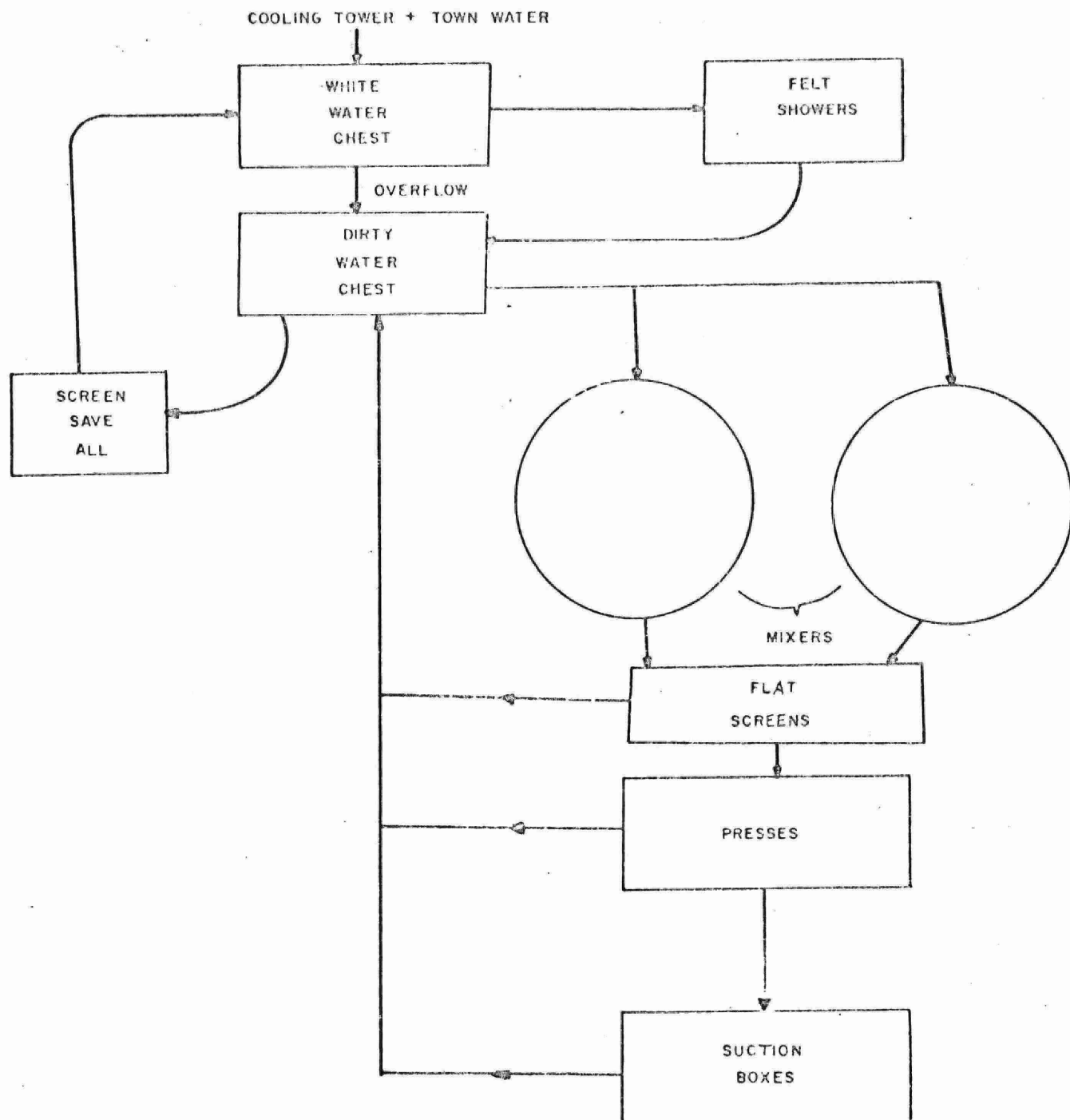


IKG ASPHALT ROOFING COMPANY LIMITED

PLANT LAYOUT FIG. III



STREAM FLOW IN FELT PLANT FIG. IX



ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: D. J. Barris*

c.c. Chem. Lab.*

Source: Iko Asphalt Roofing Co. Ltd.

Date Sampled: Aug. 2/68 **by:** D.J.H.

sb

| Lab. No. | 5-Day B.O.D. | Solids | | | pH at Lab. | Ether Solubles | | | | | | | |
|-------------|-----------------|--------|-------|-------|------------------|-------------------|--|--|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T-2383 | -- | -- | -- | -- | 8.2 | Trace | | | | | | | |
| T-2384 | -- | 374 | 50 | 324 | 8.2 | -- | | | | | | | |

| | | |
|--------|---|---|
| T-2383 | 1 | Overflow from Holding Tank (Grab 12:55 pm) |
| T-2384 | 2 | Affluent to ditch from roofing section (Grab 1:30 pm) |

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| | | | | | | | | | |
|---|--|-----------------------------|--|--|--|--------------------|--|--|--|
| Municipality: | | Report to: David J. Harris* | | | | c.c. Chem. Lab. _* | | | |
| Source: IKD Asphalt Roofing Products Ltd. | | | | | | | | | |
| Date Sampled Aug. 24/68 | | by: DJ Harris | | | | lm | | | |

| Lab. No. | 5-Day B.O.D. | Solids | | | pH at Lab. | | | | | | | | |
|----------|--------------|--------|-------|-------|------------|--|--|--|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T2594 | 950 | 3112 | 1892 | 1220 | 6.4 | | | | | | | | |
| T2595 | 1250 | 6100 | 4810 | 1290 | 6.6 | | | | | | | | |
| T2596 | 1100 | 5232 | 4034 | 1198 | 6.6 | | | | | | | | |
| | | | | | | | | | | | | | |

| | | | |
|-------|---|---|--------------|
| T2594 | 1 | effluent from white water chest during washup | grab 9:00 am |
| T2595 | 2 | " " dirty " " " " | " " " |
| T2596 | 3 | grab from sump during washup | grab 9:05 am |

JIF INDUSTRIES

This plant, located at 90 Joseph Street, was surveyed on June 25, 1968.

DETAILS OF SURVEY

Personnel Interviewed - Mr. H. Swatsky, President
Number of Employees - 40
Operating Schedule - 16 hours per day
- 5 days per week

Description of Plant Process

Jif Industries utilizes injection molding techniques for the production of small plastic items (golf tees, children's games).

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 15,800 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 800 |
| Cooling | 15,000 |
| Total | <hr/> 15,800 |

Sources and Disposal of Wastes

The majority of water utilized in this plant is for cooling of injection moulding machines. These waters are discharged to the Joseph Street sanitary sewer.

SAMPLING AND ANALYSIS

A sample of the plant effluent discharging to the sanitary sewer was obtained on June 25, 1968, and submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheet.

CONCLUSIONS AND RECOMMENDATIONS

Analysis of sample T-1509, indicates that, at the time of this survey, the waste discharging from this plant to the Joseph Street sanitary sewer complied with the proposed municipal by-law limits.

It is recommended that the company consider the diversion of all clean cooling water to a storm sewer or watercourse.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| Municipality: Brampton | | Report to: D. J. Harris * | | | | c.c. Chem. Lab.* | | | | | | | |
|--|--|----------------------------------|-------|-------|-------------------|------------------|--|--|--|--|--|--|--|
| Source: Jif Industries | | | | | | | | | | | | | |
| Date Sampled: June 25, 1968 by: D. J. Harris | | | | | | | | | | | | | |
| Lab. No. | 5-Day B.O.D. | Solids | | | Phenols in ppb | | | | | | | | |
| | | Total | Susp. | Diss. | | | | | | | | | |
| T-1509 | | | | | 6 | | | | | | | | |
| OWRC Objective | | | | | 20 | | | | | | | | |
| T-1509 | 1 Cooling water to sanitary sewer grab 12:00 noon | | | | | | | | | | | | |

LUSTROW STEEL PRODUCTS COMPANY

This plant, located at 40 Holtby Avenue, was inspected on August 1, 1968.

DETAILS OF SURVEY

Personnel Interviewed - Mr. R. J. Harkley, Plant Foreman
Number of Employees - 45
Operating Schedule - 16 hours per day
- 5 days per week

Description of Plant Process

Automotive stampings (firewalls, brake assemblies) are produced in large presses. If required, parts are spot welded.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 7,000 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 1,125 |
| Cooling | 5,875 |
| Total | <hr/> 7,000 |

Sources and Disposal of Wastes

The only wastes emanating from this plant are the compressor and spot welder coolant, and they are discharged to the Holtby Avenue storm sewer.

SAMPLING AND ANALYSIS

A sample of the plant effluent discharging to the storm sewer was obtained on August 1, 1968, and submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheet.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey the quality of the cooling water discharging to the Holtby Avenue storm sewer complied with OWRC water quality objectives.

No recommendations are made at this time.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: D.J. Harris *

C.C. Chem. Lab.-*

Source: Lustrow Steel Products Co.

Date Sampled: Aug. 1/68 **by:** DJH

br

| Lab. No. | 5-Day B.O.D. | Solids | | | Ether Solubles | Phenols in ppb. | | | | | | | |
|------------------------|-----------------|--------|-------|-------|-------------------|--------------------|--|--|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T 2366 | | | | | trace * | 3 | | | | | | | |
| | | | | | * less | than 2 ppm | | | | | | | |
| OWRC Objec- tive | | | | | 15 | 20 | | | | | | | |

T 2366

1. Effluent to storm sewer

Grab 10:30 a.m.

MORGAN ADHESIVES

This plant, located at 100 Kennedy Road, was inspected on January 22, 1969.

DETAILS OF SURVEY

| | | |
|-----------------------|---|---------------------------------------|
| Personnel Interviewed | - | Mr. N. Lines, Assistant Plant Manager |
| Number of Employees | - | 85 |
| Operating Schedule | - | 24 hours per day |
| | - | 7 days per week |

Description of Plant Process

This plant produces pressure sensitive adhesives which are applied to paper and plastic film.

Water Consumption and Distribution

Water is purchased for domestic purposes from the Brampton PUC at an average rate of 1,500 gallons per day.

Sources and Disposal of Wastes

Domestic wastes discharged to the Kennedy Road sanitary sewer are the only wastes emanating from this plant.

CONCLUSIONS AND RECOMMENDATIONS

Wastes discharging from this plant should have no adverse effect on the municipal sewerage system.

No recommendations are made at this time.

OFFICE SPECIALTY LIMITED
(COPELAND AND CHATERSON)

This plant, located at 53 Railroad Road, was surveyed on February 6, 1969.

SUMMARY

On the date of this survey, the cyanide, copper and nickel concentrations in the plating effluent exceeded the proposed municipal by-law limits for discharge to a sanitary sewer.

It is recommended that the company investigate in-plant control and chemical treatment as means of reducing the concentration of these contaminants in the plant effluent. At no time should any of the concentrated solutions used in the plating operation be discharged to the sanitary sewer.

DETAILS OF SURVEY

| | |
|-----------------------|---|
| Personnel Interviewed | - Mr. F. R. Dalzell, Plant Manager |
| | - Mr. M. Ray, Plant Engineer |
| | - Mr. B. Ridley, Metal Division Manager |
| Number of Employees | - 140 |
| Operating Schedule | - 16 hours per day |
| | - 5 days per week |

Description of Plant Process

This company produces various types of office equipment such as steel file cabinets, clipboards and file folders. Production operations can

be divided into those involving metal products (plating, bonderizing, painting), and those involving paper products (printing, cutting, custom finishing).

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 7,800 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 2,800 |
| Process | 5,000 |
| Total | 7,800 |

Sources and Disposal of Waste

The only industrial wastes emanating from this plant are the overflows from the bonderizing, etching and plating rinses (Figure I). Nickel and copper (low cyanide) are plated two to three days each week and the bonderizing and aluminum etching section is operated one day each week.

The dumping schedule for the various tanks in Figure I is summarized in Table II.

TABLE II

| TANK NUMBER | CONTENTS | FREQUENCY OF DISCHARGE |
|----------------|-------------------------|-------------------------------|
| 1 | Caustic Cleaner | 3 - 4 months |
| 2 | Water | running rinse |
| 3 | Sulfuric Acid | twice per year |
| 4 | Water | running rinse |
| 5 | Copper Plating Solution | sludge to garbage, not dumped |
| 6 | Nickel Plating Solution | sludge to garbage, not dumped |
| 7 | Nickel Plating Solution | sludge to garbage, not dumped |
| 8 | Aluminum Etch | sludge to garbage, not dumped |
| 9 | Water | running rinse |
| 10 | Phosphate Solution | not dumped |
| 11 | Chromic Acid | twice per week |
| 12 | Water | running rinse |
| 13 | Caustic Cleaner | twice per year |

At this plant, drag-out still rinses are not used in the rinsing operations. All rinsing is carried out in running rinses except for items plated in the barrel plater. These items are removed, placed on a metal table, and rinsed off with a hose.

All rinses discharge via a floor drain to a four sump settling system. These sumps serve the dual purpose of settling solids in the plating effluent and receiving the drainage of the parking lot. The contents of the final sump overflow to the Mill Street sanitary sewer (Figure II).

SAMPLING AND ANALYSIS

On February 6, 1969, a three hour composite sample was collected from the following locations:

1. Effluent discharged into first sump (930-1230 hours).
2. Contents of final settling sump (1000-1300 hours).

These samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheet.

WASTE LOADINGS

The waste loading to the sanitary sewer from the plating operations is summarized in Table III.

TABLE III

| | SUSPENDED SOLIDS | CYANIDE | COPPER | NICKEL |
|---|---------------------|---------|--------|--------|
| First settling basin (ppm) | 120 | 35.3 | 21.2 | 44.5 |
| Final settling basin (ppm) | 50 | 14.8 | 8.3 | 10.5 |
| Percent reduc- tion | 58% | 58% | 61% | 69% |
| Loading (lbs/day) | 1.2 | 0.4 | 0.2 | 0.3 |
| Proposed Muni- cipal By-law limit (ppm) | 350 | 5 | 8 | 10 |

It should be noted that the amount of runoff from melting snow and ice on the parking lot was great enough to significantly dilute the plating effluent between the first and final settling basin.

DISCUSSION OF FINDINGS

The cyanide, copper and nickel concentrations in the plating effluent exceeded the proposed municipal by-law limit. The reduction in concentration of these contaminants between the first and final settling basin can be attributed to a large extent to dilution by parking lot runoff.

CONCLUSIONS AND RECOMMENDATIONS

On the day of this survey the plating effluent discharging from this plant to the sanitary sewer did not comply with the proposed municipal by-law limits.

It is recommended that this company investigate in-plant control and chemical treatment as means of reducing the concentration of cyanide, copper and nickel in the plating effluent.

At no time should any of the concentrated solutions be discharged to the sanitary sewer without adequate pretreatment.

FIG 1
OFFICE SPECIALTY LTD. (COPELAND CHATERSON)

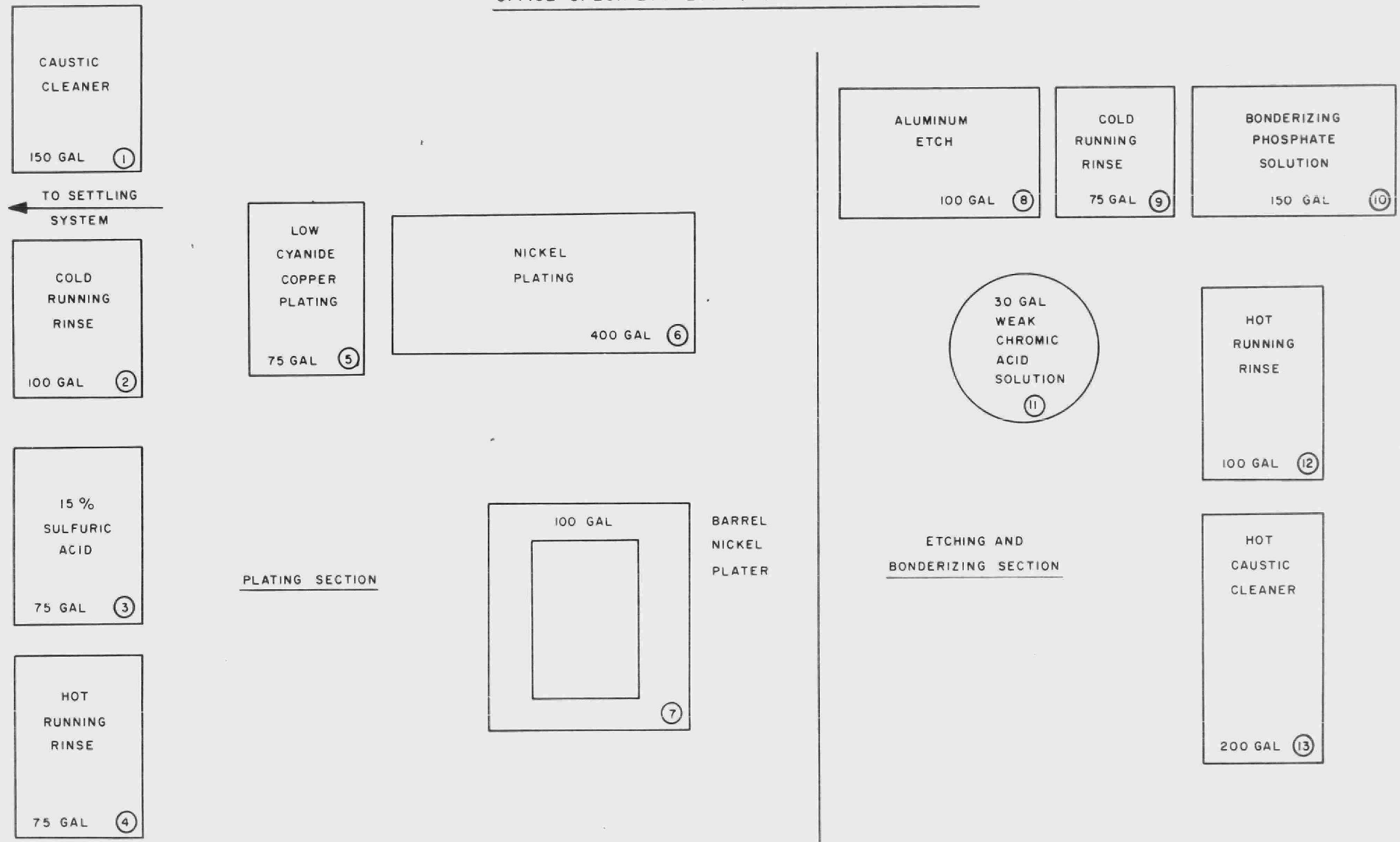
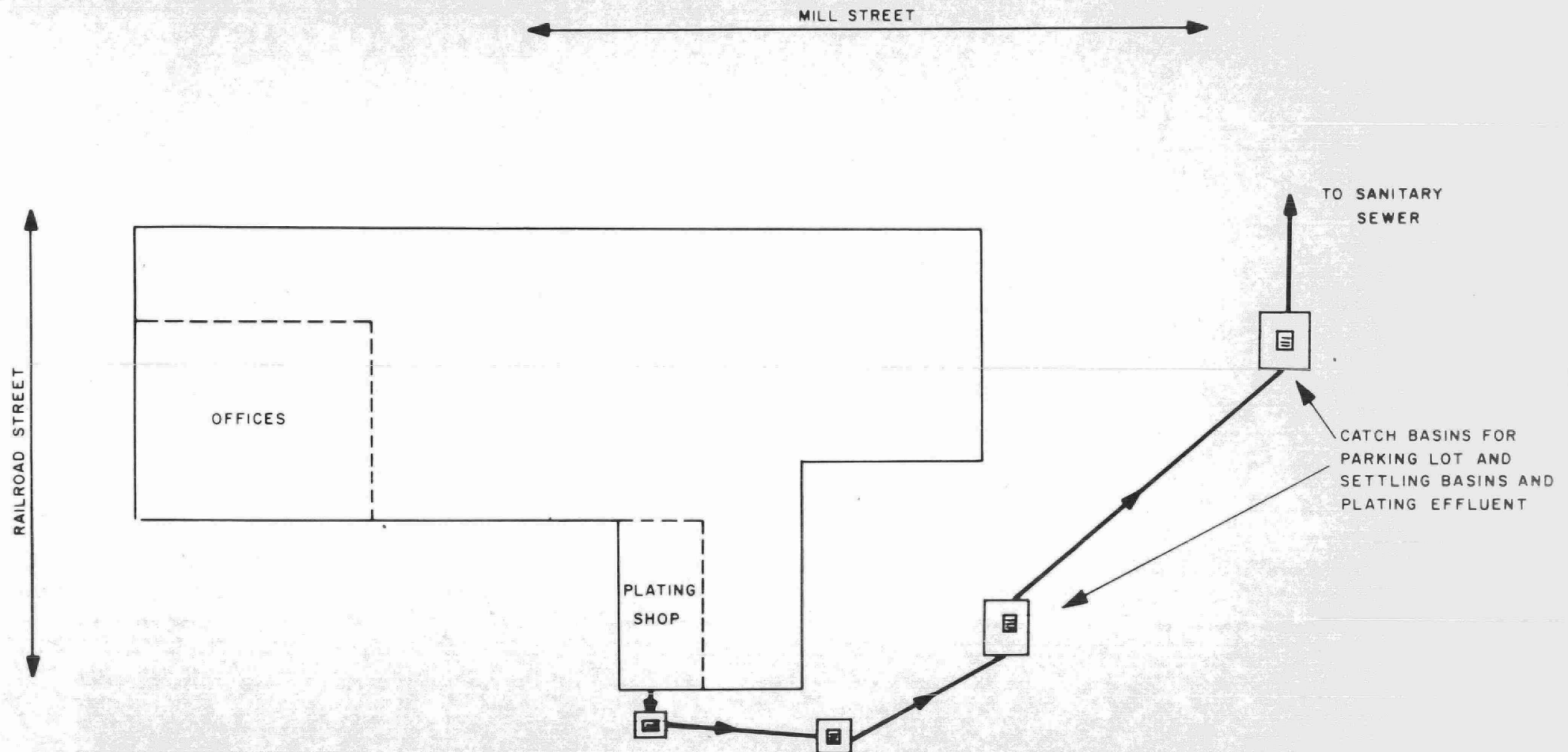


FIG II
OFFICE SPECIALTY LTD. (COPELAND CHATERSON)



ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| Municipality: Brampton | | Report to: David J. Harris * | | | | c.c. Chem. Lab.* /rd | | | | | | |
|---|--|------------------------------|-------|-------|-----|----------------------|----------------------|---------------------|---------------------|------------------------------------|--|--|
| Source: OFFICE SPECIALTY LIMITED | | | | | | | | | | | | |
| Date Sampled: Feb. 6, 1969 by: D. J. Harris | | | | | | | | | | | | |
| Lab. No. | 5-Day B.O.D. | Solids | | | COD | pH at Lab. | Cyanide as HCN | Copper as Cu. | Nickel as Ni. | Phosphate as PO ₄ | | |
| | | Total | Susp. | Diss. | | | | | | | | |
| T-111 | ** | 1070 | 120 | 950 | 55 | 7.9 | 35.3 | 21.2 | 44.5 | 15. | | |
| T-112 | ** | 700 | 50 | 650 | 37 | 8.4 | 14.8 | 8.3 | 10.5 | 11. | | |
| ** High Copper and Nickel interference. | | | | | | | | | | | | |
| T-111 | 1. Effluent into first settling Basin (9:30 a.m. - 12:30 a.m.) | | | | | | | | | | | |
| T-112 | 2. Contents of final settling basin (10:00 a.m. - 1:00 a.m.) | | | | | | | | | | | |

PRE-CON MURRY LIMITED

This company has two plants in the Brampton area, designated as Plant #1 (35 Rutherford Road) and Plant #3 (75 Orenda Road). Plant #3 was surveyed on August 23, 1968, at which time Plant #1 was not operating. Plant #1 was surveyed on March 4, 1969.

PLANT #1

SUMMARY

On March 4, 1969, the pH value and suspended solids concentration of the plant effluent discharging to a tributary of Etobicoke Creek did not comply with OWRC water quality objectives.

It is recommended the company adjust the pH value and reduce the suspended solids concentration of the plant effluent to meet OWRC water quality objectives.

DETAILS OF SURVEY

| | |
|------------------------|--------------------------------------|
| Personnel Interviewed. | - Mr. G. Clark, Plant Superintendent |
| Number of Employees | - 35 |
| Operating Schedule | - 8-1/2 hours per day |
| | - 5 days per week |

Description of Plant Process

This plant is presently producing tunnel liners to be used by the Toronto Transit Commission in subway construction. The components of concrete are mixed, poured into metal forms, removed when hardened, cured and stored.

Water Consumption and Distribution

This plant purchases water for domestic and industrial purposes from the Brampton PUC at a rate of 55,400 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 775 |
| Curing | 54,125 |
| Washing | 500 |
| Total | 55,400 |

Sources and Disposal of Wastes

There are three waste streams discharging from this plant to neighbouring watercourses (see Figure I). Stream (1) contains only roof waters from the storage area. Stream (3) contains the waste from the washing of the mixer and mixing area. (discharged at end of operating day). Stream (2) originates from the curing area and is of constant flow. The concrete tunnel liners when removed from the forms are placed in the curing area, maintained at a temperature between 70 and 80°F and constantly showered with water. After seven days they are removed and stored in the yard area.

Only domestic wastes discharge to Orenda Road sanitary sewer.

SAMPLING AND ANALYSIS

Grab samples were obtained of streams (2) and (3) on March 4, 1969, and submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition.

Analytical results are summarized on the appended industrial waste analysis sheet.

WASTE LOADINGS

The waste loading from this plant to the creek (a tributary of Etobicoke Creek) is summarized in Table II.

TABLE II

| STREAM | FLOW (gallons/day) | SUSPENDED SOLIDS | | pH | ETHER SOLUBLES | |
|----------------|-----------------------|---------------------|---------|------|-------------------|---------|
| | | ppm | lbs/day | | ppm | lbs/day |
| (2) | 54,125 | 40 | 21.6 | 12.3 | 4 | 2.2 |
| (3) | 500 | 820 | 4.1 | 9.1 | 8 | 0.04 |
| Total | | | 25.7 | | | 2.2 |
| OWRC Objective | | 15 | | | 15 | |

NOTE: ppm - parts per million

DISCUSSION OF FINDINGS

The plant wastes discharging to the creek did not comply with OWRC water quality objectives in terms of suspended solids concentration and pH value.

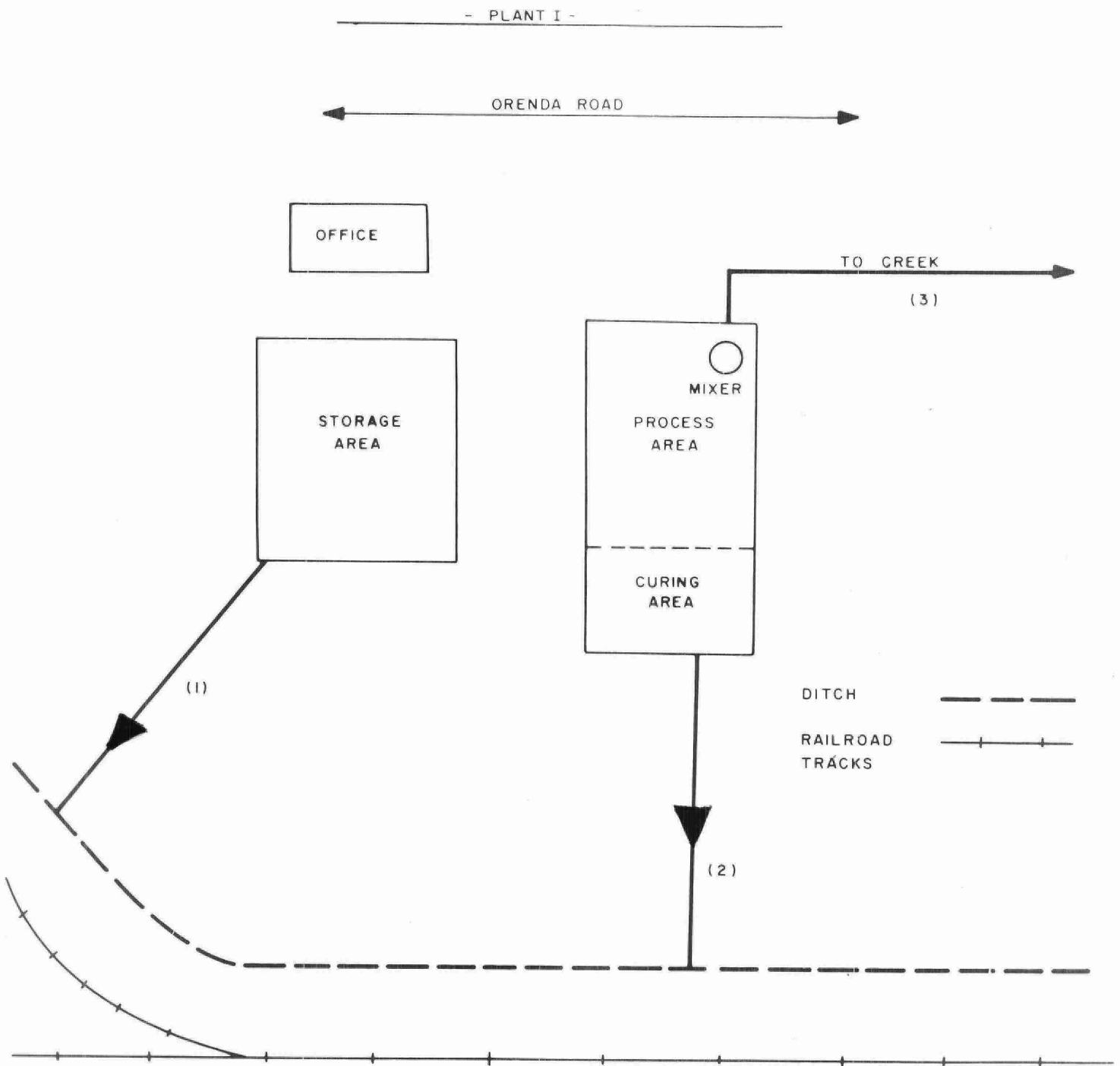
The creek was noticeably impaired in the vicinity of stream (3) discharge.

CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey the waste discharge from this plant did not comply with OWRC water quality objectives.

It is recommended that the company investigate means of reducing the suspended solids concentration and adjusting the pH value of the plant effluent to meet OWRC water quality objectives.

FIG I
PRE - CON MURRAY LTD.



ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| | | | | | | | | | |
|---------------|--|----------------------------------|--|------------|--|-------------|--|-----------------|--|
| Municipality: | | Brampton | | Report to: | | D.J. Harris | | c.c. Chem. Lab. | |
| Source: | | Pre-Con Murry Limited - Plant #1 | | | | | | | |
| Date Sampled: | | Mar. 4/69 | | by: | | DJH | | br | |

| Lab. No. | 5-Day B.O.D. | Solids | | | pH at Lab. | Calcium as Ca | Alkalinity as CaCO ₃ | Ether Solubles | | | | | |
|-------------|-----------------|---|-------|-------|---------------|------------------|------------------------------------|--|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T 224 | | 260 | 40 | 220 | 9.1 | 23 | 104 | 4 | | | | | |
| T 225 | | 1940 | 820 | 1120 | 12.3 | 381 | 907 | 8 | | | | | |
| T 224 | 1. | Plant effluent to railroad ditch from Curing Area | | | | | | Grab 11:00 a.m. | | | | | |
| T 225 | 1. | Washwater from mixer area - discharged to creek | | | | | | Grab 4:45 p.m. - Duplicate of above 1. | | | | | |

PLANT #3

SUMMARY

On August 23, 1968, the pH value, suspended solid concentration and ether soluble concentration of the plant effluent discharging to a tributary of the Etobicoke Creek did not comply with OWRC water quality objectives. The following is recommended;

- 1) segregation of compressor cooling water from washing waste,
- 2) regular cleaning of the main sump and enlargement if necessary,
- 3) installation of an oil separator to reduce ether soluble concentration,
- 4) adjustment of the pH of the effluent to within OWRC objectives.

DETAILS OF SURVEY

| | |
|-----------------------|---|
| Personnel Interviewed | - Mr. K. Cotterill, Plant Manager |
| Number of Employees | - 65 |
| Operating Schedule | - 18 hours per day - 5 days per week |

Description of Plant Process

This plant produces various architectural pre-cast concrete forms used in construction. This process consists of mixing the concrete raw materials and pouring the mixture into prepared wooden frames. The prepared frames are covered with an oily mixture to ease the removal of the concrete forms. Some of these forms are further treated in an etching

operation (weak solution of HCl brushed on, hosed off).

Water Consumption and Distribution

This plant purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 11,500 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 1,300 |
| Process | 10,200 |
| Total | 11,500 |

Sources and Disposal of Wastes

The industrial wastewater discharged from this plant consists of etching rinse water, wash water from the cleaning of wooden forms and wash water from the general clean-up (beginning of each day). These waste streams plus the compressor cooling water discharge to a sump located inside the building. The effluent from this sump flows through a catch basin in the parking lot and discharges to a creek via a ditch. The catch basin also receives the wash water from the large mixer.

The only wastes discharged to the sanitary sewer are domestic.

SAMPLING AND ANALYSIS

On August 22, 1968, grab samples were taken at the following locations;

- 1) Sump inside the plant (1430 hours)
- 2) Catch basin in parking lot (1435 hours)
- 3) Effluent discharged to ditch (1435 hours)

These samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition.

Analytical results are summarized on the appended industrial waste analysis sheet.

WASTE LOADINGS

The waste loading from this plant to the creek (a tributary of Etobicoke Creek) is summarized in Table II.

TABLE II

| SUSPENDED SOLIDS | | ETHER SOLUBLES | | pH |
|------------------|---------|----------------|---------|------------|
| ppm | lbs/day | ppm | lbs/day | |
| 300 | 30.6 | 38 | 38.8 | 11.8 |
| 15* | | 15* | | 5.5 - 9.5* |

NOTE: ppm - parts per million

* - OWRC Objectives

DISCUSSION OF FINDINGS

On the day of this survey the pH value (11.8) and concentrations of suspended solids (300 ppm) and ether soluble material (38.8 ppm) discharging to the creek did not comply with OWRC water quality objectives which are (5.5 - 9.5, 15 ppm, 15 ppm), respectively.

It was noted that the sump located inside the building was in need of cleaning.

CONCLUSION AND RECOMMENDATIONS

On August 23, 1968, the pH value, suspended solid concentration and ether soluble concentration of the plant effluent did not comply with OWRC water quality objectives for discharge to a watercourse.

It is recommended that the following action be taken:

- 1) The compressor cooling water discharge should be removed from the sump to reduce the volume of wastewater to be treated.
- 2) The sump located in the plant should be cleaned regularly and, if necessary, enlarged.
- 3) The ether soluble concentration should be reduced by the installation of an oil separator.
- 4) The pH of the plant effluent should be adjusted to bring it within OWRC objectives.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: **Brampton**

Report to: **David J. Harris ***

c.c. Chem. Lab.* /rd

Source: **Pre- Con Murray - Plant #3**

Date Sampled: **Aug. 22/68** by: **D.J. Harris**

| Lab. No. | 5-Day B.O.D. | Solids | | | pH at Lab. | Alkalinity as CaCO ₃ | Calcium as Ca. | Ether Solubles | | | | | |
|-------------|-----------------|--------|--------|-------|------------------|---------------------------------------|----------------------|-------------------|--|--|--|--|--|
| | | Total | Susp. | Diss. | | | | | | | | | |
| T-2582 | | 18,322 | 16,498 | 1,824 | 12.1 | 627 | 564 | --- | | | | | |
| T-2583 | | 2,398 | 1,352 | 1,046 | 11.9 | 373 | 418 | --- | | | | | |
| T-2584 | | 1,520 | 300 | 1,220 | 11.8 | 288 | 344 | 38 | | | | | |

- | | |
|--------|---|
| T-2582 | 1. Grab from sump in plant #3 (2:30 p.m.) |
| T-2583 | 2. Grab from small sump just outside plant #3 (2:35 p.m.) |
| T-2584 | 3. Effluent from plant #3 to ditch (2:40 p.m.) |

REGAL DIE CASTING

This plant, located at 89 Heart Lake Road South, was surveyed on August 22, 1968.

DETAILS OF SURVEY

Personnel Interviewed - Mr. C. Roser, Plant Manager
Number of Employees - 45
Operating Schedule - 16 hours per day
5 days per week

Description of Plant Process

This company is engaged in the metal casting (zinc, aluminum) of kitchen utensils, such as electric frying pans, waffle irons, pots and pans. The company produces items such as name plates for cars and appliances. This casting is carried out on four heated permanent die casters (poured) and two automatic water cooled die casters. The rest of the operation consists of grinding, drilling, polishing and packaging the items.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 10,200 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 1,225 |
| Cooling | 8,975 |
| Total | <u>10,200</u> |

Sources and Disposal of Wastes

Water is utilized in this plant to cool the two automatic die casters and a compressor. This cooling water is discharged to the Heart Lake Road sanitary sewer.

CONCLUSIONS AND RECOMMENDATIONS

This company discharges its waste to the Heart Lake Road sanitary sewer. Since the majority of the water used in this plant is for cooling, it is unlikely that this company's operations will have any adverse effect on the municipal sewerage system.

It is recommended that consideration be given to discharging the cooling water to a watercourse or storm sewer.

RIEKE METAL PRODUCTS

This plant, located at 125 Orenda Road, was surveyed on July 22, 1968.

SUMMARY

The concentration of zinc (19 ppm) in the waste discharging from this plant to the sanitary sewer on July 22, 1968, exceeded the proposed municipal by-law limit of 10 ppm. At the present time these wastes do not appear to be adversely affecting the sewage system.

It is recommended that the batch discharge of chromate solution be chemically treated before discharge to the sanitary sewer.

DETAILS OF SURVEY

| | |
|-----------------------|--------------------------------|
| Personnel Interviewed | - Mr. Sandler, General Manager |
| Number of Employees | - 22 |
| Operating Schedule | - 24 hours per day |
| | - 5 days per week |

Description of Plant Process

This company produces plastic and metal closures for chemical containers. These are produced in a series of extrusion (plastic), punching, pressing and welding operations (metal). The metal parts requiring zinc coating are plated in a cyanide-free system.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an approximate rate of 99,500 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|---------------------|-----------------------------|
| Domestic | 550 |
| Cooling and Plating | 99,000 |
| Total | 99,550 |

Sources and Disposal of Wastes

The majority of the water utilized at this plant is for the cooling of extruders, welders, and compressors. This cooling water is collected in a 4,000 gallon underground holding tank with overflow discharging to the sanitary sewer. The water required for the plating system is pumped from this holding tank.

The sequence, volume and dumping schedule for the plating tanks are given in Table II.

TABLE II

| CONTENTS | VOLUME (gallons) | DUMPING SCHEDULE |
|---------------------------------|---------------------|-----------------------------------|
| alkali cleaner | 500 | twice per year |
| rinse | 250 | running rinse |
| alkali cleaner | 250 | twice per year |
| rinse | 250 | running rinse |
| muriatic acid | 250 | once per week |
| rinse | 250 | running rinse |
| rinse | 250 | running rinse |
| zinc pyrophosphate batch | 1000 | not dumped |
| dry spin | - | pumped back into previous tank |
| cold water counterflow rinse | 500 | running rinse |
| chromate dip | 250 | once per week |
| cold water counterflow rinse | 500 | running rinse |
| hot water rinse | 250 | hot running rinse |

In the dry spin operation, the plating barrel is spun in an empty tank. As the tank fills, the solution is pumped back into the zinc pyrophosphate tank. This solution is constantly filtered and the residue is hauled away for land dumping. The running rinses discharge to the sanitary sewer via two 500 gallon settling tanks connected in series.

SAMPLING AND ANALYSIS

On August 26, 1968, composite samples were collected every fifteen minutes between 1330 hours and 1500 hours at the following locations:

- 1) contents of cooling water holding tank,
- 2) contents of first settling basin,
- 3) final effluent from plant to sanitary sewer.

Grab samples were taken of the muriatic acid dip and chromate solution at 1450 hours.

These samples were submitted to the OWRC laboratory for analysis in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheet.

WASTE LOADINGS

The waste loading from this plant to the sanitary sewer is summarized in Table III. The plating line operates 30 hours per week (average) with a discharge of approximately 7,000 gallons per hour.

TABLE III

| SUSPENDED SOLIDS | | pH | COD | | CHROMIUM | | ZINC | | ETHER SOLUBLES | |
|------------------|---------|------------|-----|---------|----------|---------|------|---------|----------------|---------|
| ppm | lbs/day | | ppm | lbs/day | ppm | lbs/day | ppm | lbs/day | ppm | lbs/day |
| 60 | 25.2 | 7.5 | 22 | 9.5 | 0.22 | 0.1 | 19 | 8.0 | 7 | 2.5 |
| 350* | | 5.5 - 9.5* | | | 10* | | 10* | | 15* | |

NOTE: ppm - parts per million

* - proposed municipal by-law limits

loadings based on six hours of operation per day @ 7,000
gallons per hour.

DISCUSSION OF FINDINGS

At the time of this survey the concentration of zinc (19 ppm) in the waste discharging to the sanitary sewer from this plant exceeded the proposed municipal by-law limit of 10 ppm. To allow any precipitation of this zinc in the settling basins, an adjustment in the pH would be necessary. However, even with an adjusted pH, it is doubtful if the total retention time (approximately 10 minutes) is sufficient to allow any appreciable reduction in zinc concentration.

Although the volume of the chromate solution is not large (250 gallons), concentrated solutions should not be discharged without adequate pretreatment. It would be desirable to have the hexavalent chromium reduced and removed prior to discharge of the treated solution to the sanitary system.

CONCLUSIONS AND RECOMMENDATIONS

At the present time the industrial waste discharged from this plant does not appear to be adversely affecting the municipal sanitary sewerage system.

It is recommended that the chromate solution be chemically treated before discharge to the sanitary system.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: David J. Harris *

c.c. Chem. Lab. *

Source: Rieke Canada Ltd.

Date Sampled: Aug. 26/68 by: D.J. Harris

(rj)

| Lab. No. | 5-Day B.O.D. | Solids | | | COD | pH at Lab. | Alkalinity as CaCO ₃ | Acidity as CaCO ₃ | CHROMIUM AS | | Zinc as Zn. | Ether Solubles | Phenols in ppb |
|-------------|-----------------|--------|-------|-------|-----|---------------|------------------------------------|---------------------------------|-------------|------|----------------|-------------------|----------------------|
| | | Total | Susp. | Diss. | | | | | TOT. | HEX. | | | |
| T-2603 | | 308 | 11 | 297 | --- | --- | --- | --- | --- | --- | --- | 12 | 12 |
| T-2604 | | 502 | 92 | 410 | 40 | 7.5 | 34 | 11 | 0.30 | 0.02 | 15.6 | --- | --- |
| T-2605 | | 484 | 60 | 424 | 22 | 7.5 | 198 | 10 | 0.22 | 0.04 | 19. | 7 | 6 |
| T-2606 | | 9358 | 18 | 9340 | --- | 0.0 | --- | 103,040 | --- | --- | --- | --- | --- |
| T-2607 | | 11810 | 10 | 11800 | --- | 0.8 | --- | 26,560 | 560. | 290. | --- | --- | --- |

| | | | | | | | | | | | | | |
|--------|---|---|--|--|--|--|--|--|--|--|--|--|--|
| T-2603 | 1 | Contents of holding tank for cooling water (1.30 pm - 3.00 pm) | | | | | | | | | | | |
| T-2604 | 2 | Contents of first settling basin (1.30 pm - 3.00 pm) | | | | | | | | | | | |
| T-2605 | 3 | Final Effluent from plant to Sanitary Sewer (1.30 pm - 3.00 pm) | | | | | | | | | | | |
| T-2606 | 4 | Grab from Muriatic Acid Solution (2.50 pm) | | | | | | | | | | | |
| T-2607 | 5 | Grab from Chromate Dip Solution (2.55 pm) | | | | | | | | | | | |

SONCO TUBE LIMITED

This plant, located at 14 Holtby Avenue, was surveyed on January 16, 1969.

SUMMARY

The ether soluble concentration (17 ppm) in the plant effluent discharging to the Holtby Avenue storm sewer on January 16, 1969, was slightly in excess of the OWRC objective of 15 ppm. It is recommended that the company continue their efforts to reduce the ether soluble concentration to meet the OWRC objective.

DETAILS OF SURVEY

| | |
|-----------------------|-------------------------------|
| Personnel Interviewed | - Mr. L. Clark, Plant Foreman |
| Number of Employees | - 150 |
| Operating Schedule | - 16 hours per day |
| | - 6 days per week |

Description of Plant Process

Steel sheets of various gauge are cut to desired widths and fed into an automated line which forms the strips into a cylindrical shape and seam welds them to form the completed tube.

Water Consumption and Distribution

This company obtains water for domestic and industrial purposes from the Brampton PUC at an average rate of 56,400 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 3,750 |
| Cooling | <u>52,650</u> |
| Total | 56,400 |

Sources and Disposal of Wastes

The major portion of the process water is utilized for the cooling of compressors and welders. This coolant discharges to the Holtby Avenue storm sewer.

In the past, water soluble oil (used in the automated line for cooling and lubricating) has periodically been discharged to Fletcher's Creek via the Holtby Avenue storm sewer. This oil, used in a closed circuit, is stored in an 8,000 gallon underground holding pit. The possible means of oil escape and the preventative measures implemented are summarized in Table II.

TABLE II

| SOURCE OF OIL | CORRECTIVE MEASURE TAKEN |
|---|--|
| 1) Dumping of spent oil at rear of plant - seeps into drainage system. | Spent oil is collected in drums and hauled away for disposal. |
| 2) Oil held in concrete pit - seeps through concrete wall. | The pit was lined with steel and the joints welded. |
| 3) The negligence of an employee when adding make-up to the oil storage tank resulted in an overflow | <p>The sewer which serviced the oil storage tank was blocked off.</p> <p>Locks were placed on all the water faucets (only Maintenance Man has key).</p> <p>An automatic level control device and alarm system was installed in the holding tank.</p> |
| 4) Ground water gained access to the oily sumps in the electrical section and discharged directly to the storm sewer. | The discharge of the wastes from the electrical sumps have been redirected to the oily water holding pits. |
| 5) The seepage of oil, through cracks in floor and uncapped floor drains, into weeping tiles | <p>All drains in the plant were plugged.</p> <p>All cracks and openings in the floor were plugged.</p> <p>Locks were placed on all water faucets.</p> |

SAMPLING AND ANALYSIS

On January 29, 1969, a grab sample was obtained of the plant effluent discharging to the Holtby Avenue storm sewer. This sample was submitted to the OWRC laboratory for analysis of suspended solids, ether soluble material and phenols in accordance with procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheet.

WASTE LOADINGS

The waste loading (based on an estimated flow of 52,650 Igpd) from this plant to the storm sewer is summarized in Table III.

TABLE III

| PHENOLS | | ETHER SOLUBLES | | SUSPENDED SOLIDS | |
|---------|---------|----------------|---------|------------------|---------|
| ppb | lbs/day | ppm | lbs/day | ppm | lbs/day |
| 4 | 0.002 | 17 | 8.9 | 2 | 1.1 |
| 20* | | 15* | | 15* | |

ppb - parts per billion

ppm - parts per million

* - OWRC objective

DISCUSSION OF FINDINGS

At the time of this survey the ether soluble concentration (17 ppm) in the plant effluent discharging to the storm sewer was slightly in excess of the OWRC objective of 15 ppm. In the past, the ether soluble concentration has been as high as 600 ppm.

CONCLUSIONS AND RECOMMENDATIONS

Analytical results of sample T-83 indicate that the corrective measures taken by this company have greatly reduced the concentration of ether soluble material in the wastes discharged to Fletcher's Creek. However, in order to determine the full extent of these alterations, it is recommended that the company monitor their waste discharging to the Holtby Avenue storm sewer. Initially, at least one composite sample should be collected per week and analyzed at an independent laboratory for ether soluble concentration (oil). The weekly results should be summarized and forwarded to this Division on a bi-monthly basis. Every effort should be made, by this company, to prevent any oil from escaping in the plant effluent.

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

| Municipality: Brampton | | Report to: D.J. Harris | | c.c. Chem. Lab. | | | | | | | | |
|--|--|------------------------|-------|-----------------|-------------------|-------------------|--|--|--|--|------|--|
| Source: Sonco Steel Co. Ltd. | | | | | | | | | | | | |
| Date Sampled: Jan. 29/69 by: D.J. Harris | | | | | | | | | | | (rj) | |
| Lab. No. | 5-Day B.O.D. | Solids | | | Ether Solubles | Phenols in ppb | | | | | | |
| | | Total | Susp. | Diss. | | | | | | | | |
| T-83 | | --- | 2 | --- | 17 | 4 | | | | | | |
| OWRC Objec- tive | | | 15 | | 15 | 20 | | | | | | |
| T-83 | 1 Grab from storm sewer manhole (11.00 AM) | | | | | | | | | | | |

STRIPPIT TOOL AND MACHINES LIMITED

This plant, located at 40 Hansen Road, was surveyed on January 22, 1969.

DETAILS OF SURVEY

Personnel Interviewed - Mr. C. Bissonette, Plant Manager
Number of Employees - 40
Operating Schedule - 16 hours per day
- 5 days per week

Description of Plant Process

Metal and wood working tools are manufactured at this plant.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 4,640 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 1,000 |
| Cooling | 3,640 |
| Total | <hr/> 4,640 |

Sources and Disposal of Wastes

The only industrial waste emanating from this plant is the cooling water from metal working machines. This flow discharges to the Hansen Road sanitary sewer. Cutting oil is recycled and when spent is stored in barrels prior to land disposal. There are no floor drains in this plant.

SAMPLING AND ANALYSIS

Samples could not be obtained as the cooling water discharge is totally enclosed.

CONCLUSIONS AND RECOMMENDATIONS

Waste discharging from this plant should have no adverse effect on the municipal sewerage system.

No recommendations are made at this time.

UNION SCREEN COMPANY OF CANADA LIMITED

This plant, located at 30 Kennedy Road South, was inspected on August 14, 1968.

SUMMARY

The concentration of chromium (23 ppm) in the plant effluent discharging to the sanitary sewer on August 14, 1968, was in excess of the proposed municipal by-law limit (10 ppm) even though it was diluted by the running of excess rinses. It is recommended that these wastes be treated before discharge to the sanitary sewer, to effect a reduction in the chromium loading and a possible reduction in the hydraulic loading.

DETAILS OF SURVEY

| | |
|-----------------------|----------------------------------|
| Personnel Interviewed | - Mr. A. Cheadle, Manager |
| | - Mr. H. Monaghan, Plant Foreman |
| Number of Employees | - 20 |
| Operating Schedule | - 24 hours per day |
| | - 5 days per week |

Description of Plant Process

This company is engaged primarily in the hard chromium plating of large machinery parts (75% of production). There is also copper plating using both the acid and cyanide procedure (15%), nickel plating (9%) and cadmium plating (1%). Accompanying these operations are such steps as metal cleaning of parts prior to plating, rinsing following plating, stripping of the plate previously applied (if part was not new), and dewaxing of parts which were covered to avoid plating specific areas.

The sequence of tanks into which the parts to be plated are dipped, and the length of time that the parts remain in each tank are varied according to the plating requirements for each article. Figure I is a schematic diagram of the plating room layout.

After chromium plating, the parts are dropped into a still rinse (drag-out tank used for make-up), then hosed down while suspended over the tank. As a final step the parts are passed through a running rinse. After copper, nickel, or cadmium plating, the parts are passed through a running rinse only.

In the back plating shop there is a mechanized production line for the plating of piston rods. On the average, forty racks of approximately 34 rods per rack are processed daily. Custom job plating in the rest of the plant results in a wide variance in the concentration of contaminants discharged.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an approximate rate of 58,600 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 500 |
| Process | 58,100 |
| Total | 58,600 |

Sources and Disposal of Wastes

The sources of wastes within this plant are:

- 1) the overflow from the running rinse tank,
- 2) the cooling water or steam (depending on strength of current used) from the coils in the plating tank,
- 3) cooling water from the vapour degreaser and compressor,
- 4) blowdown water from the boiler,
- 5) the spent acids and caustic stripping solutions.

The spent acids and caustic stripping solutions are not discharged to the sanitary sewer, but are hauled by truck for land disposal.

The overflow from the rinse tanks, along with the cooling waters from the vapour degreaser and compressor, discharge to a cement pit located under the wood floor of the main plating shop. All rinse water from the back plating shop also drains into this pit via pipes through the wall. The pit drains directly to the sanitary sewer.

The roof drains and the boiler blowdown discharge to the ditch running parallel to Kennedy Road.

The chrome plating tanks are equipped with fume removal ducts which lead to a plenum, a pit, and thence to a sanitary sewer. On one occasion, through operator neglect, the make-up hose was left running

resulting in chromium solution reaching the sewer via the tank fume ducts. To avoid any repetition of this incident, the company has implemented the following alterations;

- 1) tank make-up hoses were equipped with automatic timers,
- 2) the connection from the plenum to the pit has been valved to allow for any plating tank overflows to be retained in the plenum for chemical treatment prior to discharge to sewer.

SAMPLING AND ANALYSIS

The total plant effluent discharging to the sanitary sewer was samples for 3-1/2 hours at 1/2 hour intervals beginning at 1300 hours, August 14, 1968.

In addition the following grab samples were collected on August 14 and 15, 1968;

- 1) contents of holding pit (1545 hours)
- 2) plant effluent to sanitary sewer (815 hours)
- 3) effluent to ditch (boiler blowdown) (820 hours)

All samples were submitted to the OWRC laboratory for analysis in accordance with the procedures outlined in "Standard Methods for the Examination of Water and Wastewater", twelfth edition. The analytical results are summarized on the appended industrial waste analysis sheet.

WASTE LOADINGS

The waste loading from this plant to the sanitary sewer is summarized in Table II.

TABLE II

| SUSPENDED SOLIDS | | pH | CHROMIUM | | | | COPPER | |
|------------------|---------|-----------|----------|---------|------------|---------|--------|---------|
| | | | TOTAL | | HEXAVALENT | | | |
| ppm | lbs/day | | ppm | lbs/day | ppm | lbs/day | ppm | lbs/day |
| 6 | 3.5 | 6.9 | 23 | 13.5 | 21 | 12.3 | 0.54 | 0.32 |
| 350* | | 5.5 - 9.5 | 10* | | - | | 8* | |

NOTE: ppm - parts per million

* - proposed municipal by-law limits

DISCUSSION OF FINDINGS

The suspended solids concentration (74 ppm) and pH value (11.8) of the boiler blowdown discharged to the ditch did not comply with the OMRC objectives (15 ppm and 5.5 - 9.5 respectively).

The concentration of chromium (23 ppm) in the plant effluent discharging to the sanitary sewer was in excess of the proposed municipal by-law limit (10 ppm). A grab sample (T-2585) obtained of the effluent during removal and rinsing of large items had a chromium concentration of 62 ppm.

The concentration of ether soluble material in the pit is not normal. The day previous to the survey, a fire had resulted in an oil spill. The pit was to be cleaned the following week.

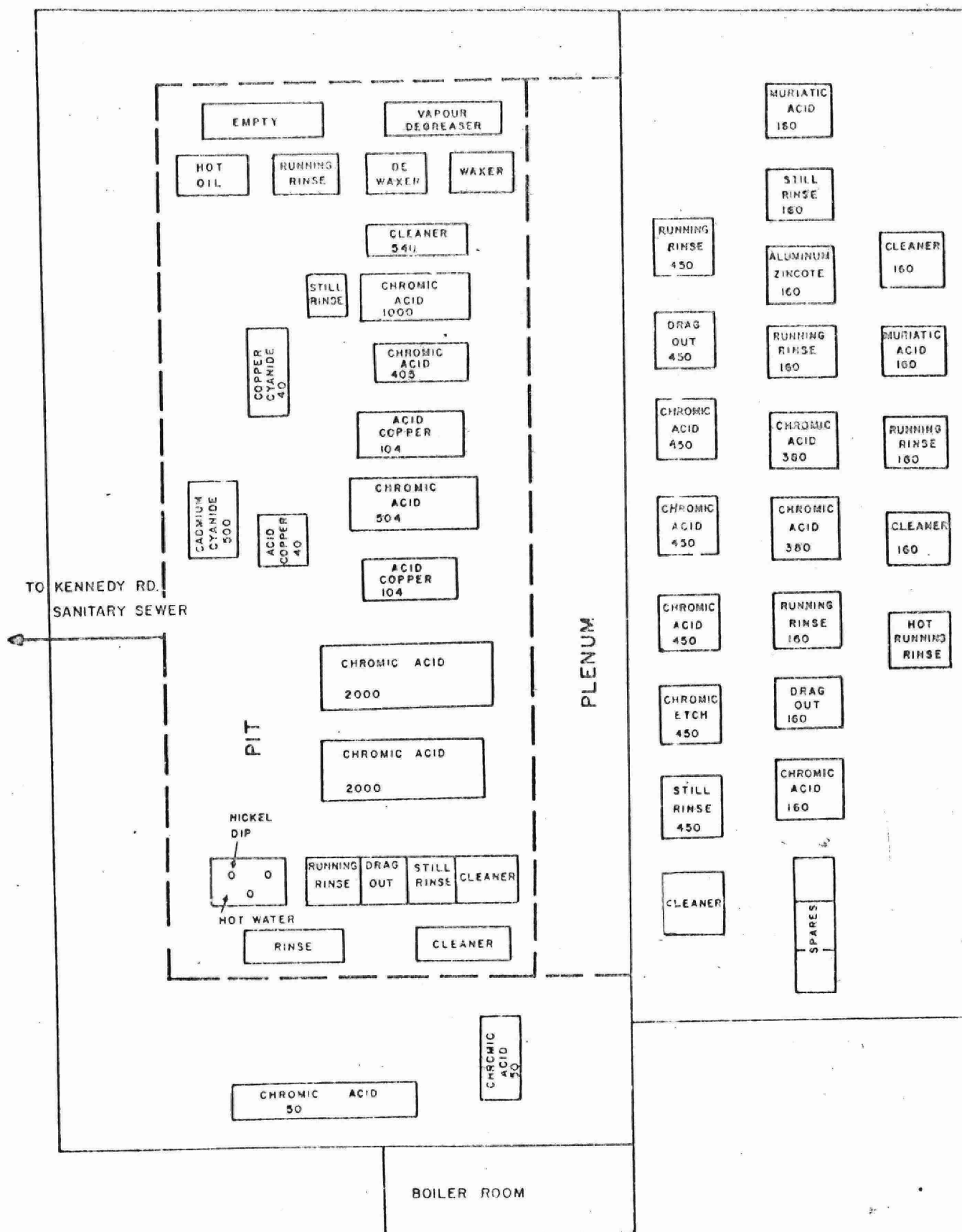
CONCLUSIONS AND RECOMMENDATIONS

At the time of this survey, the concentration of chromium in the plant effluent discharging to the sanitary sewer was in excess of the proposed municipal by-law limit. It is therefore recommended that the company segregate and chemically treat the concentrated chromium wastes before dilution by other waste streams.

It is also recommended that the boiler blowdown, which does not comply with OWRC objectives in terms of suspended solids concentration and pH value, be discharged to the sanitary sewer.

THE UNION SCREEN PLATE COMPANY OF CANADA LIMITED

PLATING LAYOUT FIG. 1



**ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES**

INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: D.J. Harris *

C.C. Chem. Lab. *

Source: The Union Screen Plate
Company of Canada Ltd.

(rj)

Date Sampled: Aug. 23/68 **by:** D.J.H

| Lab. No. | 5-Day B.O.D. | Solids | | | pH at Lab. | Chromium | as Cr. | Copper as Cu | Nickel as Ni | Iron as Fe | Ether Solubles | Zinc as Zn | COD |
|-------------|-----------------|--------|-------|-------|---------------|----------|--------|-----------------|-----------------|---------------|-------------------|---------------|-----|
| | | Total | Susp. | Diss. | | Total | Hexa | | | | | | |
| T-2585 | | 336 | 27 | 309 | 6.4 | 62 | 53 | 0.17 | 0.17 | --- | 2 | 0.24 | 58 |
| T-2586 | | 308 | 74 | 234 | 11.8 | --- | --- | --- | --- | 2.8 | --- | --- | 245 |

T-2585 1 Effluent to Sanitary Sewer - manhole in front yard (Grab 8.15 AM)

T-2586 2 Effluent to Ditch at front of building (Grab 8.20 AM)

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES
INDUSTRIAL WASTE ANALYSIS

All analyses except pH reported in
p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Brampton

Report to: D.J. Harris *

c.c. Chem. Lab. *

Source: The Union Screen Plate Company
of Canada Ltd.

(rj)

Date Sampled: Aug. 14/68 **by:** D.J.Harris

| Lab. No. | 5-Day B.O.D. | Solids | | | pH at Lab. | Acidity as CaCO ₃ | Alkalinity as CaCO ₃ | CHROMIUM AS Cr. | | Cyanide as HCN | Copper as Cu | Cadmium as Cd | Ether Solubles |
|-------------|-----------------|--------|-------|-------|---------------|---------------------------------|------------------------------------|-----------------|-----------------|-------------------|-----------------|------------------|-------------------|
| | | Total | Susp. | Diss. | | | | TOT. | Hexa- valent | | | | |
| T-2488 | | 1112 | 6 | 1106 | 6.9 | 24 | 88 | 23. | 21. | 0.00 | 0.54 | 0.05 | 2 |
| T-2489 | | 462 | 84 | 378 | 7.0 | 24 | 101 | 20. | 14. | 0.01 | 0.77 | 0.07 | 36 |

| | | |
|--------|----|--|
| T-2488 | 1A | Effluent to Sanitary Sewer - manhole in front yard (Comp. 1.00 PM - 4.30 PM) |
| T-2489 | 2A | Grab from Pit (3.45 PM) |

WHEATON GLASS AND PLASTICS COMPANY
OF CANADA LIMITED

This plant, located at 49 Rutherford Road, was surveyed on August 1, 1968.

DETAILS OF SURVEY

| | | |
|-----------------------|---|-----------------------------|
| Personnel Interviewed | - | Mr. A. Burke, Plant Manager |
| Number of Employees | - | 43 |
| Operating Schedule | - | 1-1/2 shifts per day |
| | - | 5 days per week |

Description of Plant Process

This company is engaged in the production of pharmaceutical containers. Long glass tubes are either cut and sealed to produce vials, or heated and pulled to produce ampules. There are five machines performing each operation. The machines producing the vials have water cooled dies. The only other industrial use of water is for the cooling of 3 carbon ringed oil-free compressors.

Water Consumption and Distribution

This company purchases water for domestic and industrial purposes from the Brampton PUC at an average rate of 2,625 gallons per day. Estimated water distribution is summarized in Table I.

TABLE I

| USE | VOLUME (gallons per day) |
|----------|-----------------------------|
| Domestic | 1,075 |
| Cooling | 2,625 |
| Total | 3,700 |

Sources and Disposal of Wastes

The cooling waters for the dies and compressors discharge to the Rutherford Road sanitary sewer.

SAMPLING AND ANALYSIS

Samples could not be obtained as the cooling water discharge is totally enclosed.

CONCLUSIONS AND RECOMMENDATIONS

Since the majority of water used in this plant is for cooling, it is unlikely that this company's operations will have any adverse effect on the municipal sewerage system.

It is recommended that consideration be given to directing this cooling water to a watercourse.



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